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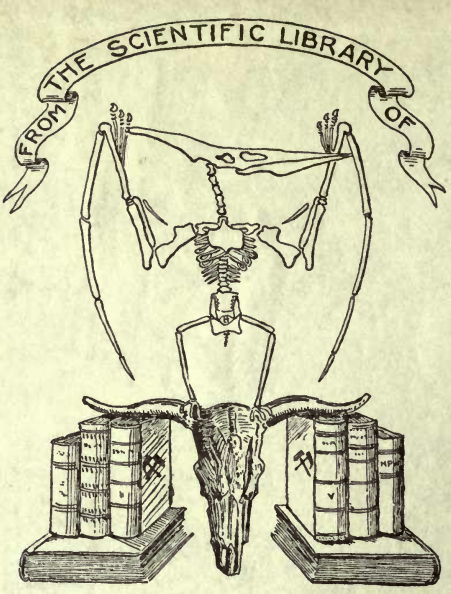

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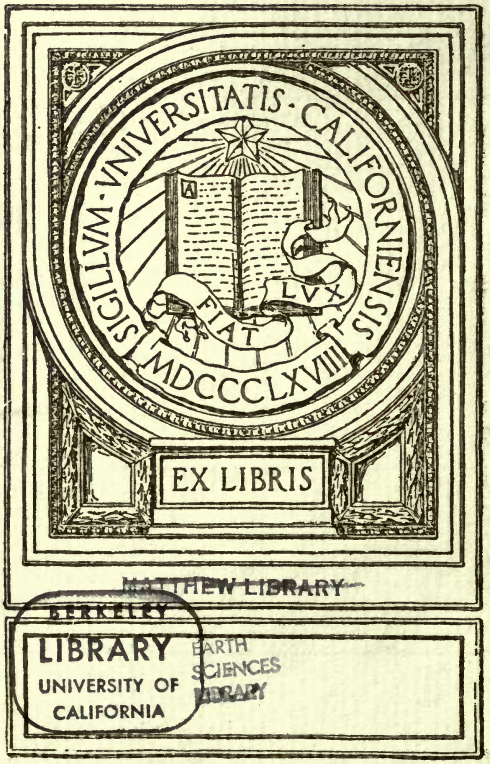

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CATALOGUE

OF THE

UNGULATE MAMMALS

IN THE

BRITISH MUSEUM (NATURAL HISTORY).

UNIV. OF CALIFORNIA

VOL. III.

ARTIODACTYLA,

FAMILIES BOVIDÆ,

SUBFAMILIES ÆPYCEROTINÆ TO TRAGELAPHINÆ

(PALA, SAIGA, GAZELLES, ORYX GROUP, BUSHBUCKS, KUDUS, ELANDS, ETC.),

ANTILOCAPRIDÆ (PRONGBUCK), AND

GIRAFFIDÆ (GIRAFFES AND OKAPI).

By R. LYDEKKER, F.R.S.,

ASSISTED BY

GILBERT BLAINE.

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PREFACE

THE third Volume of the Catalogue of Ungulate Mammals includes the subfamilies Æpycerotinæ, Saiginæ, Pantholopinæ, Antilopinæ, Oryginæ and Tragelaphinæ, and thus completes the Bovidæ, while it contains also an account of the Antilocapridæ and Giraffidæ. Like its predecessors, it has been prepared by Mr. R. Lydekker, who has received much assistance, as in the case of Volume II., from Mr. Gilbert Blaine.

A fourth Volume of this Catalogue is in preparation, which it is hoped will include the remainder of the Artiodactyla.

SIDNEY F. HARMER,
Keeper of Zoology.

BRITISH MUSEUM (NATURAL HISTORY),
LONDON, S.W.
June 6, 1914.

808431

Society's copy is mainly followed; in the present volume that of the Museum copy is quoted.

Thanks are again due to the Council of the Zoological Society, as well as to the Smithsonian Institute, Messrs. Rowland Ward, and various friends, for *clichés* of published figures or of photographs.

May 10*th*, 1914.

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HEAD AND NECK OF BARINGO GIRAFFE
(*Giraffa camelopardalis rothschildi*).

CATALOGUE

OF

UNGULATES.

VOL. III.

UNIV. OF CALIFORNIA

Family BOVIDÆ (*concluded*).

KEY TO SUBFAMILIES INCLUDED IN THIS VOLUME.

c. Horns (when twisted) heteronymous (vol. ii, p. 1).

a. Horns absent in females; feet without deep interdigital clefts; molars caprine.

a'. A pair of glands on lower ends of hind-shanks; nose normal ..... *Æpycerotinæ*, p. 4.

b'. No glands on lower ends of hind-shanks; nose abnormal.

a''. Nose trunk-like, with downwardly directed nostrils; typically three pairs of upper and two of lower premolars ..... *Saiginæ*, p. 12.

b''. Nose slightly bent down and laterally inflated, with forwardly directed nostrils; two pairs of premolars..... *Pantholopinæ*, p. 17.

b. Horns present or absent in females; when present in both sexes, not spike-like in males.

a'. Feet with deep interdigital clefts; molars caprine; tail short or medium; foot-glands present..... *Antilopinæ*, p. 21.

b'. Feet without deep interdigital clefts; molars semi-bovine; tail medium or long; foot-glands wanting ..... *Tragelaphinæ*, p. 150.

c. Horns present in both sexes.

Feet without deep interdigital clefts; molars semi-bovine; tail long; foot-glands present ..... *Oryginæ*, p. 117.

Subfamily Uncertain.

Genus AMMODORCAS.

Ammodorcas, *Thomas, Proc. Zool. Soc.* 1891, p. 207; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 216, 1898; *Pocock, Proc. Zool. Soc.* 1910, pp. 897 and 917.

Represented by a single species, of the approximate stature of the medium-sized gazelles. General form somewhat gazelle-like, but neck slender and elongated, horns (which are absent in female) curving backwards and then forwards, much in the fashion of those of a reedbuck, and tail long, reaching nearly to hocks; muzzle hairy; face-glands present and gazelle-like; foot-glands and inguinal glands apparently wanting; two pairs of teats; knees with small glandular tufts; lateral hoofs small; tail medium. Skull of a gazelle-like type, with shallow lachrymal depressions, and the premaxillæ reaching the nasals; the normal three pairs of premolars in each jaw, of which the first are usually small.

Restricted to Somaliland.

In regard to the affinities of this genus, Pocock, after referring to his examination of certain dried skins, proceeds to remark that "superficially the feet showed no signs of pedal glands. Certainly there were none such as exist in the *Antilopinæ;* and I judged that the feet resembled those of *Æpyceros* or *Kobus*. Also there were two pairs of well-developed teats, and, I could find no evidence of inguinal glands. These features, coupled with the long 'bovine' tail, and the shape and direction of the horns, which are more cervicaprine [reduncine] than gazelline, should exclude the genus from the *Antilopinæ*. On the other hand, the preorbital glands appear to be like those of *Gazella*, and the muzzle is hairy, as in that genus. The skull is also very gazelline.

"These cross-resemblances make *Ammodorcas* extremely difficult to classify. It has been described as intermediate between *Gazella* and *Lithocranius*. This is true of the length of the neck, the structure of the upper lip, and some characters connected with the skull. On the other hand, in

the structure of the feet, horns, and tail the genus is less gazelline than *Lithocranius*."

AMMODORCAS CLARKEI.

Cervicapra clarkei, *Thomas*, *Ann. Mag. Nat. Hist.* ser. 6, vol. vii, p. 304, 1891.

Ammodorcas clarkei, *Thomas*, *Proc. Zool. Soc.* 1891, p. 207, pls. xxi and xxii; *Sclater*, *ibid.* 1892, pp. 101 and 118; *Ward*, *Records of Big Game*, p. 128, 1892, ed. 6, p. 277, 1910, ed. 7, p. 244, 1914; *Lydekker*, *Horns and Hoofs*, p. 240, 1893, *Great and Small Game of Africa*, p. 368, 1899, *Game Animals of Africa*, p. 271, 1908; *Swayne*, *Proc. Zool. Soc.* 1895, p. 318, *Seventeen Trips to Somaliland*, p. 310, 1895; *Hoyos*, *Zu den Aulikan*, p. 181, 1895; *Elliot*, *Zool. Publ. Field Mus.* vol. i, p. 124, 1897, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 79, 1907; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 219, pl. lxxiii, 1898; *Clarke*, *Great and Small Game of Africa*, p. 368, 1899; *Pocock*, *Proc. Zool. Soc.* 1910, p. 917; *Drake-Brockman*, *Mammals of Somali.* p. 83, 1910.

Dibatag.

Typical locality, Buroa Wells, East Central Somaliland.

Shoulder-height about 31 inches. General colour dark purplish rufous or cinnamon; face with a pair of gazelle-like white streaks, continuous posteriorly with a whitish area round eyes and ears, median dark streak rich fulvous rufous, lateral dark facial streaks ill-defined; backs of ears dull whitish; chin and under surface of jaw, under-parts, backs of hams, and inner sides of upper portion of limbs white; shanks fulvous; tail, which has a small tuft, blackish above and below. Basal length of skull 7½ inches. Good horns measure from 11 to about 12½ (in one instance 13) inches in length, with a girth of from 4¼ to 5½, and a tip-to-tip interval of from 2¼ to 5½ inches.

91. 5. 7. 1. Skull, with horns, and head-skin. Buroa Wells, East Central Somaliland. Type.
Presented by T. W. H. Clarke, Esq., 1891.

91. 12. 19. 4. Skin, mounted, and skull. Habr-Tojal, near Buroa Wells. *Same history.*

91. 12. 19. 5. Skull, with horns, and skin (in bad condition). Same locality. *Same history.*

91. 12. 19. 6–7. Two skulls and skins (in bad condition), female. Same locality. *Same history.*

91. 12. 3. 5. Skull, with horns. Near Bur-Dap Mts., Somaliland. Noticed in *Book of Antelopes*, vol. iii, p. 226.
Presented by Gen. Sir A. H. Paget, G.C.B., 1891.

86. 1. 25. 7. Skin. Somaliland; collected by Herr J. Menges. *Presented by Dr. P. L. Sclater*, 1886.

FIG. 1.—HEAD OF DIBATAG (*Ammodorcas clarkei*).
From Thomas, *Proc. Zool. Soc.* 1891.

96. 10. 6. 2. Skeleton and skin, female. Darror Wells, Somali Haud. *Book of Antelopes, loc. cit.*
Presented by Ford G. Barclay, Esq., 1896.

96. 10. 6. 3. Head, mounted, and body-skin. Same locality. *Same history.*

SUBFAMILY XI.—ÆPYCEROTINÆ.

Represented by a single genus, with one (or possibly two) species of relatively large size. Horns (absent in female) medium or rather long, heteronymous, broadly lyrate, ridged in front, and slightly compressed; tail of medium length and

slender; nose normal; muzzle hairy; no face-glands or foot-glands (at least in fore-limbs), but, according to Owen, inguinal glands present; teats two; a pair of black-tufted glands on hind surface of lower part of hind-shanks, but no glandular tufts on knees; lateral hoofs wanting; feet similar in structure to those of most of the *Reduncinæ*, but the membrane between the hoofs clothed with short hairs; tail medium. Skull without supraorbital pits or lachrymal depressions, but with small lachrymal vacuities; three pairs of lower premolars.

Range same as that of genus.

Genus ÆPYCEROS.

Æpyceros, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 271, 1847; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 15, 1897; *Pocock, Proc. Zool. Soc.* 1910, p. 918.

Æpyceras, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 71, 1907.

Characters those of the subfamily.

The range extends from Little Namaqualand, just south of the Orange River, and Bechuanaland as far north as Angola on the western, and British East Africa and, it is said, the Dafur district of the southern Sudan on the eastern side of the continent.

ÆPYCEROS MELAMPUS.

Antilope melampus, *Lichtenstein, Reise*, vol. ii, p. 544, pl. iv, 1812, *Mag. nat. Freunde*, vol. vi, p. 167, 1814; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1224, pl. cclxxiv, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 388, 1821, *Synop. Mamm.* vol. ii, p. 405, 1845, *Mon. Antilop.* p. 7, pl. vi, 1848; *Desmarest, Mammalogie*, vol. ii, p. 456, 1822; *Burchell, Travels in S. Africa*, vol. ii, p. 301, 1824, *List Mamm. presented to Brit. Mus.* p. 5, 1825; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 219, vol. v, p. 334, 1827; *Lesson, Man. Mamm.* p. 374, 1827, *Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842; *J. B. Fischer, Synop. Mamm.* p. 462, 1829; *Smuts, Enum. Mamm. Cap.* p. 74, 1832; *A. Smith, S. African Quart. Journ.* vol. ii, p. 209, 1834; *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 217, pl. xxix, 1835; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Harris, Wild Anim. S. Africa*, p. 78, pl. xv, 1840; *Gervais, Dict. Sci. Nat.* vol. i, p. 261, 1840; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 616, 1841; *Gray, List Mamm. Brit. Mus.* p. 162, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *List Osteol. Brit.*

Mus. p. 57, 1847, *Knowsley Menagerie*, p. 6, 1850; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 417, 1844, vol. v, p. 409, 1855; *Peters, Reise nach Mossambique, Säugeth.* p. 190, 1852; *Temminck, Esquiss. Zool. Guiné*, p. 190, 1853; *Giebel, Säugethiere*, p. 313, 1853–55; *Drummond, Large Game S. Africa*, p. 426, 1875; *Brehm, Thierleben. Säugethiere*, vol. iii, p. 203, 1880; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 477, 1887.

Antilope pallah, *Gervais* (ex *Cuv.*) *Dict. Sci. Nat.* vol. i, p. 261, 1840.

Æpyceros melampus, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 271, 1847; *Gray, Proc. Zool. Soc.* 1850, p. 116, *Cat. Ungulata Brit. Mus.* p. 65, 1852, *Cat. Ruminants Brit. Mus.* p. 42, 1872, *Hand-List Ruminants Brit. Mus.* p. 112, 1873; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 234, 1862; *Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 171, 1863; *Sclater, Proc. Zool. Soc.* 1864, p. 101, 1893, p. 728; *Kirk, ibid.* 1864, p. 656; *Heuglin and Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. liv, pt. 1, p. 590, 1866; *Fitzinger, ibid.* vol. lix, pt. 1, p. 157, 1869; *Buckley, Proc. Zool. Soc.* 1876, pp. 283 and 291, 1897, p. 454; *Heuglin, Reise Nordost-Afrika*, vol. ii, p. 103, 1877; *Selous, Proc. Zool. Soc.* 1881, p. 757, *A Hunter's Wanderings in S. Africa*, p. 216, 1881; *Pagenstecher, Jahrb. Mus. Hamburg*, vol. ii, p. 40, 1884; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 272, 1884; *Johnston, Kilimanjaro*, pp. 218 and 324, 1886; *Noack, Zool. Jahrb., Syst.* vol. ii, p. 206, 1887; *Jentink, Notes Leyden Mus.* vol. ix, p. 173, 1887, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 138, 1889, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 170, 1892; *Hunter, Willoughby's E. Africa*, p. 288, 1889; *Crawshay, Proc. Zool. Soc.* 1890, p. 604; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 169, 1891, *Fauna S. Africa, Mamm.* vol. i, p. 203, 1900; *Flower and Lydekker, Study of Mammals*, p. 341, 1891; *Ward, Records of Big Game*, p. 99, 1892, ed. 6, p. 226, 1910, ed. 7, p. 226, 1914; *Nicolls and Eglington, Sportsman in S. Africa*, p. 41, 1892; *True, Proc. U.S. Nat. Mus.* vol. xv, p. 472, 1892; *Lydekker, Horns and Hoofs*, p. 229, 1893, *Great and Small Game of Africa*, p. 323, 1899, *Game Animals of Africa*, p. 239, 1908; *Barkley, Proc. Zool. Soc.* 1894, p. 132; *Thomas, ibid.* 1894, p. 145; *Jackson, Big Game Shooting* (*Badminton Libr.*), vol. i, pp. 285 and 306, 1894; *Lorenz, Ann. Hofmus. Wien*, vol. ix, *Notizen*, p. 61, 1894; *Rendall, Proc. Zool. Soc.* 1895, p. 359; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 17, pl. xlviii, 1897; *Kirby, Great and Small Game of Africa*, p. 323, 1899; *A. H. Neumann, ibid.* p. 327; *Powell-Cotton, Unknown Africa*, p. 572, 1904; *Pocock, Proc. Zool. Soc.* 1910, 918; *Letcher, Big Game N. E. Rhodesia*, p. 185, 1911.

Æpyceras melampus, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 72, 1907.

PALA, PALLA, or IMPALA.

Typical locality Klipfontein, Little Namaqualand, S. E. Africa.

Height at withers about 39 inches; general colour bright reddish brown, or bay, becoming paler on flanks; head dark

fawn, with or without a blackish face-blaze, a dark mark in front of eye on sides of face, or a black patch on crown; a streak above eye, chin and under surface of jaw, upper part of throat, and under-parts white; ears medium, with the backs fawn, and the terminal third black; a light ring above

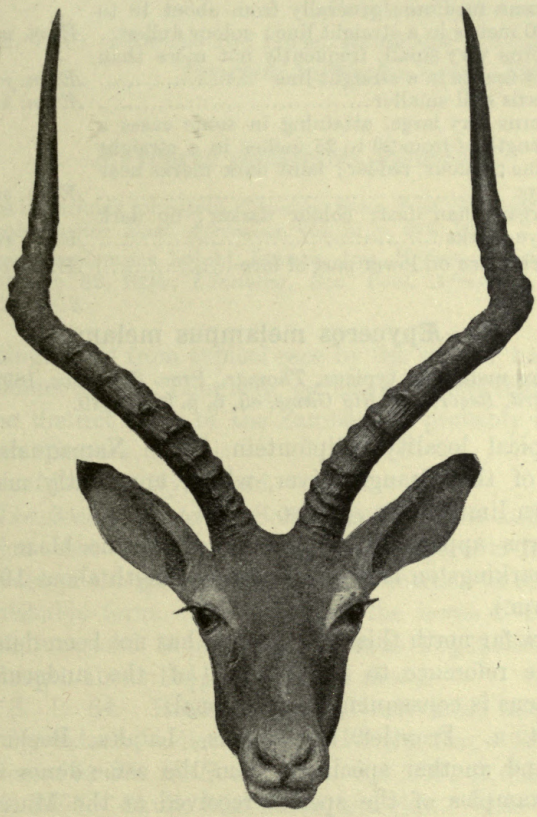

FIG. 2.—HEAD OF PALA (*Æpyceros melampus*).

hoofs on each pastern, a pair of black glandular tufts on lower end of posterior surface of hind-shanks, and a black line on upper surface of tail, extending more or less on to loins. Average basal length of skull about 10¼ inches. Horns vary in length locally from about 18 to as much as 30 or even 31 inches, measured along the curve, and from about 14 to 24 or even 25½ inches in a straight line.

Range co-extensive with that of the genus.

The following races have been named, but some of these are very closely related, and so imperfectly defined, that a complete "key" cannot yet be drawn up:—

A. No dark blaze on lower part of face.
  a. Horns medium; generally from about 18 to 20 inches in a straight line; colour duller... *Æ. m. melampus.*
  b. Horns very small, frequently not more than 14 inches in a straight line ..... *Æ. m. johnstoni.*
  c. Horns still smaller..... *Æ. m. katangæ.*
  d. Horns very large, attaining in some cases a length of from 23 to 25 inches in a straight line; colour redder; faint dark marks near eye ..... *Æ. m. suara.*
  e. Larger than last, colour darker; no dark eye-marks ..... *Æ. m. rendilis.*
B. A dark blaze on lower part of face ..... *Æ. m. petersi.*

A.—Æpyceros melampus melampus.

Æpyceros melampus typicus, *Thomas, Proc. Zool. Soc.* 1892, p. 553; *Ward, Records of Big Game*, ed. 6, p. 227, 1910.

Typical locality Klipfontein, Little Namaqualand, just south of the Orange River, which apparently marks the southern limit of the species.

Horns apparently medium in size; no blaze or other dark markings on face. Basicranial length about $10\frac{7}{8}$ inches (260 mm.).

How far north this race extends has not been determined, and the reference to it of some of the undermentioned specimens is consequently provisional.

619, *a*. Frontlet and horns, Lataku, Bechuanaland. This and another specimen from the same donor were the first examples of the species received at the Museum, and probably in England. The animal to which they belonged was shot in 1812. *Presented by Dr. W. J. Burchell, about* 1817.

38. 6. 9. 102. Skin, immature. South Africa; collected by Sir Andrew Smith, probably in the Western Transvaal or Griqualand. *Purchased,* 1838.

42. 12. 6. 1. Skin, female. South Africa. *Presented by the Earl of Derby,* 1842.

57. 4. 28. 76. Skin, mounted. South Africa; collected by Dr. Smuts. *Purchased,* 1857.

57. 4. 28. 77. Skin, mounted. Same locality and collector. *Same history.*

50. 8. 22–23. Two pairs of horns. South Africa. *Purchased* (*Argent*), 1850.

59. 8. 17. 1. Skull, with horns. South Africa. *Purchased* (*Stevens*), 1859.

89. 2. 4. 4. Frontlet and horns, immature. Swaziland. *Presented by Morton Green, Esq.*, 1889.

B.—Æpyceros melampus johnstoni.

Æpyceros melampus johnstoni, *Thomas*, *Proc. Zool. Soc.* 1892, p. 553; *Lönnberg*, *Rev. Zool. Africaine*, vol. iii, p. 273, 1913.

(?) Æpyceros melampus holubi, *Lorenz*, *Ann. Hofmus. Wien*, vol. ix, *Notizen*, p. 62, 1894; *Lönnberg*, *Rev. Zool. Africaine*, vol. iii, p. 278, 1913.

Distinguished from typical race by the shorter horns and more slender skull. Lönnberg, *op. cit.*, considers that *holubi*, from the district north of the Zambesi, is probably inseparable from this race.

Typical locality Nyasaland.

In *The Book of Antelopes* Sclater and Thomas came to the conclusion that the Nyasa pala was inseparable from the typical race of the species, but it seems entitled to rank as a distinguishable form. The length of the horns of the type specimen, measured in a straight line is $13\frac{7}{8}$ inches; basi-cranial length about $10\frac{11}{16}$ inches (255 mm.).

92. 8. 1. 64. Head, mounted, body-skin, and skull. Zomba, Nyasaland; collected by A. Whyte, Esq. Type. *Presented by Sir H. H. Johnston, G.C.M.G., K.C.B.*, 1892.

92. 8. 1. 65. Skull, with horns, and skin. Same locality and collector. *Same history.*

93. 7. 9. 23–24. Two skulls, with horns. Shiré Highlands. *Same donor*, 1893.

97. 10. 1. 294. Skin, female. Zomba; collected by Mr. Carson. *Same donor*, 1897.

93. 7. 25. 3. Skull, with horns, and skin, provisionally referred to this race. Lake Mweru, N. W. Rhodesia; collected by R. Crawshay, Esq. Letcher writes that the Rhodesian pala carries much smaller horns than its

East African representative, from 18 to 20 inches along the curve being a good measurement. *Same donor*, 1893.

8. 4. 3. 93. Skull, with horns, and skin (head-skin separate). Tetté, Zambesia; collected by Mr. C. H. B. Grant. Probably represents the so-called *holubi*.

Presented by C. D. Rudd, Esq., 1908.

C.—Æpyceros melampus katangæ.

Æpyceros melampus katangæ, *Lönnberg*, *Rev. Zool. Africaine*, vol. iii, p. 276, 1913.

Typical locality Katanga, Belgian Congo.

Type in Congo Museum, Tervueren, near Brussels.

Still smaller than the preceding race, and, in fact, the smallest of the whole group, the basicranial length being only about 9½ inches (240 mm.).

No specimen in collection.

D.—Æpyceros melampus suara.

Strepsiceros suara, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1892, p. 135, partim.

Æpyceros suara, *Matschie*, *Säugeth. Deutsch-Ost-Afrika*, p. 129, 1895.

Æpyceros melampus suara, *Lönnberg*, *Sjöstedt's Kilimandjaro-Meru Exped., Mamm.* p. 44, 1908, *K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 164, 1910; *Roosevelt*, *African Game Trails*, p. 487, 1910.

Typical locality Kilimanjaro district, German East Africa.

Type apparently in Berlin Museum.

Size relatively small; general colour rufous—"dead leaf"; an ill-defined blackish patch below and in front of each eye; face bright rufous; backs of ears dark fawn; nasals short and narrow.

92. 10. 18. 2. Skin, mounted. Kilimanjaro; collected by Sir F. J. Jackson, K.C.M.G. Topo-type.

Purchased (*Ward*), 1892.

E.—Æpyceros melampus rendilis.

Æpyceros melampus rendilis, *Lönnberg, K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 164, 1912.

Typical locality north of Guaso-nyiro, British East Africa. Type in Royal Swedish Museum of Natural History.

Larger and darker than *suara*, with the general colour fawn, darkening into madder-brown on back; no patch in front of eyes; face with a dusky suffusion; backs of ears buff; and nasals longer and wider. Fine horns measure from 22 to 25 or 25½ inches in a straight line, and from 28 to 31 or 31⅝ along the curve, with a basal girth of from 5½ to 6⅝, and a tip-to-tip interval ranging from 9⅜ to 27⅛ inches.

63. 7. 7. 13. Skull, with horns, and skin (imperfect), immature. Uzaramo, East Africa.
Presented by Capt. J. H. Speke, 1863.

94. 5. 4. 1. Head, mounted. Near Lake Elmenteita, B. E. Africa. *Presented by Lieut.-Col. Sir F. D. Lugard, K.C.M.G., C.B.*, 1894.

96. 11. 23. 3. Skin, mounted, female. Near Lake Naivasha, B. E. Africa; collected by Sir F. J. Jackson, K.C.M.G. *Presented by J. Rowland Ward, Esq.*, 1896.

98. 7. 2. 14–15. Two skulls, with horns. N. E. Africa.
Presented by H. Andrew, Esq., 1894.

1. 8. 9. 80. Skull, with horns. Near Lake Naivasha.
Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1901.

1. 8. 9. 81. Frontlet and horns. Near Lake Baringo, N. W. Rhodesia. *Same history.*

4. 5. 5. 4. Skin. Near Lake Elmenteita.
Presented by C. B. C. Storey, Esq., 1904.

4. 7. 2. 3. Head, mounted. N. E. Africa.
Bequeathed by H. Andrew, Esq., 1904.

5. 4. 3. 32–33. Two skulls, with horns. South-west Ankoli, Uganda; collected by Mr. W. G. Doggett.
Presented by Lieut.-Col. C. Delmé-Radcliffe, 1905.

5. 4. 3. 34. Skull, female. Same locality and collector.
Same history.

7. 11. 28. 2. Skin. Lualaba Valley, Congo.
Presented by J. Rowland Ward, Esq., 1907.

F.—Æpyceros melampus petersi.

Æpyceros petersi, *Bocage*, *Proc. Zool. Soc.* 1878, p. 741; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 479; *Sclater*, *Proc. Zool. Soc.* 1890, p. 460; *Flower and Lydekker*, *Study of Mammals*, p. 341, 1891; *Lydekker*, *Horns and Hoofs*, p. 231, 1893, *Great and Small Game of Africa*, p. 323, 1899, *Game Animals of Africa*, p. 244, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 25, 1897; *W. L. Sclater*, *Fauna S. Africa*, *Mamm.* vol. i, p. 207, 1900.

Æpyceras petersi, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 79, 1907.

Æpyceros melampus petersi, *Ward*, *Records of Big Game*, ed. 6, p. 229, 1910.

Typical locality Angola.

Distinguished from typical race by the presence of a blackish brown blaze on middle of lower part of muzzle.

98. 3. 20. 2. Skin, mounted, and skull. Membo Valley, Angola; collected by G. W. Penrice, Esq.

Purchased (*Gerrard*), 1898.

98. 3. 20. 3. Skull and skin, female. Coporolé Valley, Angola; same collector. *Same history.*

5. 1. 11. 1. Skull, with horns, and skin. South Cuneni Valley, on Damara border of Angola.

Presented by Capt. B. A. Cunningham, 1905.

Subfamily xii.—SAIGINÆ.

Represented by a single medium-sized and heavily built existing species. Horns (absent in females) of medium length, heteronymous, somewhat irregularly lyrate, heavily ridged, and (unlike those of all other antelopes) amber-coloured or whitish; tail short; nose inflated and prolonged into a kind of downwardly bent proboscis, with the nostrils opening downwards; muzzle hairy; small face-glands; glands in all four feet, comparable in structure, according to Pocock, to those of a sheep rather than to those of a gazelle; a pair of small inguinal glands, placed close to the teats, which are four in number; a pair of tufted knee-glands; lateral hoofs present; foot-structure not fully known; tail short. Skull with short premaxillæ and nasals, a large and vaulted nasal aperture, small supraorbital pits, shallow lachrymal depressions, but no lachrymal vacuities; two pairs of lower and

three of upper premolars in the adult of the existing species, but apparently three lower pairs in the extinct European Pleistocene *S. prisca.**

The range of the single living species of the subfamily during the historic period included the steppes of south-eastern Europe and north-western Asia, from those between the Volga and Ural through the government of Samara, and thence eastward over the Kirghiz Steppes and the steppe-country of western Siberia; to the south it extended into Russian Turkestan, Zungaria, and the western side of the Gobi. During the Pleistocene the group ranged into western Europe.

Genus SAIGA.

Saiga, *Gray*, *List Mamm. Brit. Mus.* p. xxvi, 1843; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 29, 1897; *Pocock*, *Proc. Zool. Soc.* 1910, p. 898.

Colus, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 419, 1844.

Characters and range those of the subfamily. The genus is regarded by Pocock as exhibiting distinct signs of affinity with the *Caprinæ*, especially in the structure of the feet.

SAIGA TATARICA.

Capra tatarica,† *Linn. Syst. Nat.* ed. 12, vol. i, p. 97, 1766; *Müller*, *Natursyst.* vol. i, p. 417, 1773.

Antilope saiga, *Pallas*, *Misc. Zool.* p. 6, 1766, *Spicil. Zool.* fasc. xii, pp. 14 and 21, 1777, *Zoogr. Rosso-Asiat.* vol. i, p. 252, 1811; *Zimmermann*, *Geogr. Geschichte*, vol. ii, p. 121, 1780; *Schreber*, *Säugthiere*, pl. cclxxvi, 1782; *Boddaert*, *Elenchus Anim.* p. 143, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 185, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 309, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 626, 1792; *Link*, *Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Cuvier*, *Tabl. Élém. Hist. Nat.* p. 163, 1798, *Dict. Sci. Nat.* vol. ii, p. 229, 1894, *Règne Anim.* vol. i, p. 261, 1817; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 645, 1800; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 339, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 112, 1802; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxiv, *Table*, p. 33, 1804, ed. 2, vol. ii, p. 181, 1816, *Mammalogie*, vol. ii, p. 452, 1822; *Tiedemann*, *Zool.* vol. i, p. 409, 1808; *G. Fischer*, *Zoognosia*, vol. iii, p. 428, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Goldfuss*, *Schreber's Säugthiere*, vol. v,

* Nehring, *Neues Jarhb. Min. Geol. u. Pal.* vol. ii, p. 131, 1891.

† The name is very generally misspelt *tartarica*, in the same manner as Tatary is misspelt Tartary.

p. 1216, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 389, 1821, *Synop. Mamm.* vol. ii, p. 408, 1845, *Mon. Antilop.* p. 12, 1848; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 442, 1822; *Lesson, Man. Mamm.* p. 391, 1827, *Hist. Nat. Anim.* vol. x, p. 289, 1836, *Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842; *J. B. Fischer, Synop. Mamm.* p. 458, 1829; *Gervais, Dict. Sci. Nat.* vol. i, p. 260, 1840; *Abbott, Proc. Zool. Soc.* 1841, p. 70; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 616, 1841; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 420, 1844, vol. v, p. 402, 1855; *Giebel, Säugethiere*, p. 313, 1853–55; *Nehring, Tundren und Steppen*, p. 186, 1890, *Zeitschr. Ges. Erdkunde*, vol. xxvi, p. 327, 1891, *Zool. Garten*, 1891, p. 328; *Kiernik, Bull. Ac. Sci. Cracovie*, 1912, p. 981.

Capra sayga, *Forster, Phil. Trans.* vol. lvii, p. 344, 1767.

Antilope scythica, *Pallas, Spicil. Zool.* fasc. i, p. 9, 1767; *Müller, Natursyst., Suppl.* p. 53, 1776; *Erxleben, Syst. Regn. Anim.* p. 289, 1777; *Zimmermann, Spec. Zool. Geogr.* p. 544, 1777; *Gatterer, Brev. Zool.* vol. i, p. 83, 1780; *Oken, Allgemeine Naturgesch.* vol. vii, p. 1365, 1838.

Antilope (Gazella) saiga, *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 171, 1814.

Cerophorus (Antilope) saiga, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Cemas colus, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 736, 1816.

Antilope colus, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 226, vol. v, p. 335, 1827; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Lesson, Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842.

Saiga tatarica, *Gray, List Mamm. Brit. Mus.* p. 160, 1843, *List Osteol. Brit. Mus.* p. 55, 1847, *Knowsley Menagerie*, p. 3, 1850, *Proc. Zool. Soc.* 1850, p. 112, *Cat. Ungulata Brit. Mus.* p. 51, 1852, *Cat. Ruminants Brit. Mus.* p. 33, 1872, *Hand-List Ruminants Brit. Mus.* p. 102, 1873; *Temminck, Esquiss. Zool. Guiné*, p. 189, 1853; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 231, 1862; *Glitsch, Bull. Soc. Moscow*, 1865, p. 207; *Sclater, Proc. Zool. Soc.* 1866, p. 240, pl. xvii, *List Anim. Zool. Gardens*, p. 143, 1883; *Murie, Proc. Zool. Soc.* 1870, p. 451; *Severtzow, Ann. Mag. Nat. Hist.* ser. 4, vol. xviii, p. 171, 1876; *Przewalski, Reise in Tibet*, pp. 23 and 252, 1884; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 265, 1884; *Sterndale, Mamm. India*, p. 468, 1884; *Rossikow, Obzor mlekopit. dolingr. Malki*, p. 79, 1887; *Radde and Walter, Zool. Jahrb., Syst.* vol. iv, p. 1061, 1889; *Smith Woodward, Proc. Zool. Soc.* 1890, p. 614; *Flower and Lydekker, Study of Mammals*, p. 341, 1891; *Satunin, Mitt. Kaukas. Mus.* vol. i, p. 66, 1901, vol. ii, p. 245, 1906, vol. iii, p. 82, 1907; *Ward, Records of Big Game*, p. 101, 1892, ed. 6, p. 231, 1910, ed. 7, p. 231, 1914; *Lydekker, Horns and Hoofs*, p. 163, 1893, *Great and Small Game of Europe, etc.* p. 187, 1901; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 31, pl. xlix, 1897; *Pousargues, Mém. Soc. Zool. France*, vol. xi, p. 168, 1898; *Fritze, Jahrb. Prov. Mus. Hannover*, 1905–6, p. 42; *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 72, 1907; *Pocock, Proc. Zool. Soc.* 1910, p. 898; *Trouessart, Faune Mamm. Europe*, p. 234, 1910.

Antilope tatarica, *Forster*, *Descrip. Anim.* p. 390, 1844; *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1845, p. 270, 1847.

Saiga colus, *Gray*, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846.

Gazella colus, *Turner*, *Proc. Zool. Soc.* 1850, p. 168.

Colus saiga, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 161, 1869.

Colus tataricus, *Brehm*, *Thierleben*, *Säugethiere*, vol. iii, p. 283, 1880.

Saiga saiga, *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas* vol. ix) p. 134, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 165, 1892.

Saiga, or Saigak.

Typical locality Ural Steppes.

Size approximately that of a large sheep, the shoulder-height being about 30 inches. General colour in summer

Fig. 3.—The Saiga (*Saiga tatarica*).

dull yellowish, with the throat and indistinct markings on the face whitish; in winter, when the coat is much longer and thicker, the colour is uniformly whitish throughout;

ears short, thickly haired, and, like the very short tail, coloured like the body; two pairs of lower premolars. Basal length of skull about 9½ inches. Good horns measure from 12 to 14 inches in length, with a basal girth of from 4½ to 5¼, and a tip-to-tip interval of from 2 to 5⅞ inches.

The range within the historic period is co-extensive with that of the subfamily; whether the saiga-remains from the British gravels are rightly referred to the existing species, or whether they should be identified with the extinct *S. prisca* of the Moravian Pleistocene, may be uncertain.

96, *a*. Skin, in summer coat, mounted. Siberia.
Purchased (*Brandt*).

73. 2. 24. 6. Skin, mounted, female. Eastern Russia.
Purchased (*Gerrard*), 1873.

76. 2. 15. 6. Skeleton. Sarepta, Volga Steppes.
Purchased (*Gerrard*), 1876.

76. 5. 23. 1. Skin, in winter coat, mounted. Sarepta.
Same history.

76. 5. 23. 1, *a*. Skin, mounted, immature. Same locality.
Same history.

78. 4. 6. 2. Skin, female in winter coat, mounted, and skull. Same locality. *Purchased* (*Gerrard*), 1878.

97. 1. 5. 21. Skeleton. Siberia; collected by Dr. O. Finsch. From the collection of Sir Victor Brooke, Bart.
Presented by Sir Douglas Brooke, Bart., 1897.

1. 1. 12. 1. Skin, mounted. Volga Steppes.
Presented by the Duke of Bedford, K.G., 1901.

2. 3. 19. 3. Head, female in winter dress, mounted. Same locality. *Same donor*, 1902.

5. 8. 23. 1. Head, immature, in summer dress, mounted. Same locality. *Same donor*, 1905.

613, *a*. Pair of horns. Eastern Russia. *No history.*

613, *b*. Two left horns. Eastern Russia. Figured in *Gray's Cat. Ungulata*, pl. iii. *No history.*

78. 12. 21. 25 and 32. Two pairs of horns. Saissan, western Siberia.
Presented by the Geographical Society of Bremen, 1878.

Subfamily xiii.—PANTHOLOPINÆ.

Represented by a single existing species, of somewhat larger size than the saiga. Horns (wanting in females) long, erect, and compressed, diverging at first slightly and then more markedly, with an evenly forward heteronymous curve towards the tips, which are often a little turned in, heavily ridged on front surface for their basal two-thirds; tail short; nose slightly bent downwards, and much inflated laterally, at least in males, with the nostrils normally placed; muzzle hairy; face-glands and foot-glands* wanting; inguinal glands very large and deep, opening at a distance from the single pair of teats; no knee-tufts; lateral hoofs present; feet of the general type of those of the *Oreotraginæ* (vol. ii, p. 122), with a strong backward fold in the interungual membrane, in correlation with the full development of the hind part ("heel") of the lower surface, and the integument itself hairy as far down as the "heel-tie"; tail short. Skull with a relatively large nasal aperture (smaller than in *Saiga*), but without distinct supraorbital pits or lachrymal depressions; two pairs of upper and lower premolars in adult.†

The single generic representative of this subfamily, together with *Saiga* and *Æpyceros*, was included by Sclater and Thomas in the *Antilopinæ*. Pocock remarks, however, that in the present genus "the integumental web which ties the hoofs together is as deep and strong as in cattle (*Bos*) or elands (*Taurotragus*), and the feet are quite different from those of typical gazelles...; and the hoofs clearly have nothing like the extension seen in the feet of sheep and goats." Although exhibiting some relationship to *Saiga*, it is considered by the same writer that *Pantholops* should be allowed, at least provisionally, separate subfamily rank.

The range is confined to the plateau of Tibet, where, in addition to the existing form, the single genus appears to be represented by an extinct species from the later Tertiary

* *Teste* Pocock.

† This was first pointed out by Pousargues, *Mém. Soc. Zool. France*, vol. xi, p. 174. Whether the missing teeth are developed in the young and subsequently shed, as is the case with the anterior pair of lower premolars in *Saiga*, does not appear to be ascertained.

deposits of Hundes, described by the present writer in 1881 (*Rec. Geol. Surv. India*, vol. xiv, p. 180, figured *Quart. Journ. Geol. Soc.* vol. lvii, p. 289) as *Pantholops hundesiensis*.

Genus PANTHOLOPS.

Pantholops, *Hodgson*, *Proc. Zool. Soc.* 1834, p. 81; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 43, 1897; *Pousargues*, *Mém. Soc. Zool. France*, vol. xi, p. 173, 1898; *Pocock*, *Proc. Zool. Soc.* 1910, p. 898.

Characters and range the same as those of the subfamily.

PANTHOLOPS HODGSONI.

Antilope hodgsoni, *Abel*, *Calcutta Govt. Gazette*, 1826, vide *Phil Mag.* vol. lxviii, p. 234, 1826, *Edinburgh Journ. Sci.* vol. vii, p. 164, 1827, '*Editor*,' *Gleanings in Science*, vol. i, p. 144, 1829; *J. B. Fischer*, *Synop. Mamm.* p. 462, 1829; *Hodgson*, *Gleanings in Science*, vol. ii, p. 348, pls. iii–v, 1830, *Proc. Zool. Soc.* 1831, p. 52, 1832, p. 14, 1833, p. 110; *Gervais*, *Dict. Sci. Nat.* vol. i, p. 261, 1840; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 617, 1841; *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 420, 1844, vol. v, p. 402, 1855; *Schinz*, *Synop. Mamm.* vol. ii, p. 415, 1845; *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1845, p. 270, 1847; *Giebel*, *Säugethiere*, p. 314, 1853–55; *Hooker*, *Himalayan Journals*, vol. ii, pp. 132 and 158, 1854; *Przewalski*, *Mongolia* (*Russian ed.*), vol. ii, p. 323, pls. iii and iv, 1875, *Morgan's Transl. of same*, vol. ii, pp. 204 and 223, 1876.

Antilope kemas, *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 196, vol. v, p. 328, 1827; *Lesson*, *Hist. Nat. Anim.* vol. x, p. 285, 1836.

Antilope chiru, *Lesson*, *Man. Mamm.* p. 371, 1827 (ex. *Quart. Orient. Mag.* 1824, p. 260, nomen nudum); *Oken*, *Allgemeine Naturgeschichte*, vol. vii, p. 1369, 1838; *Lesson*, *Nouv. Tabl. Règne Anim.*, *Mamm.* p. 179, 1842.

Pantholops hodgsoni, *Hodgson*, *Proc. Zool. Soc.* 1834, p. 80, *Journ. Asiat. Soc. Bengal*, vol. xi, p. 282, 1842, *Calcutta Journ. Nat. Hist.* vol. iv, p. 291, 1844; *Gray*, *Cat. Ungulata Brit. Mus.* p. 52, 1852, *Cat. Ruminants Brit. Mus.* p. 33, 1872; *Hand-List Ruminants Brit. Mus.* p. 102, 1873; *Adams*, *Proc. Zool. Soc.* 1858, p. 521; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 232, 1862; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 162, 1869; *Blanford*, *Scientific Results*, 2nd *Yarkand Miss.*, *Mamm.* p. 89, pl. xvi, 1879, *Fauna Brit. India*, *Mamm.* p. 524, 1891; *Przewalski*, *From Kulja to Lob Nor*, p. 85, 1879, *Reise in Tibet*, pp. 109, 118, 129 and 166, 1884; *Sterndale*, *Mamm. India*, p. 464, 1884; *Kinloch*, *Large Game Shooting*, p. 106, 1885; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 134, 1889, *Cat. Mamm. Leyden Mus.* (*ibid.* vol. xi) p. 166, 1892; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii,

p. 161, 1891; *Flower and Lydekker, Study of Mammals*, p. 341, 1891; *Ward, Records of Big Game*, p. 102, 1892, ed. 6, p. 236, 1910, ed. 7, p. 233, 1914; *Lydekker, Horns and Hoofs*, p. 157, 1893, *Great and Small Game of India, etc.* p. 167, 1900, *Game Animals of India, etc.* p. 184, 1907, *Cat. Hume Bequest Brit. Mus.* p. 28, 1913; *Percy, Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 335, 1894; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 45, pl. l, 1897; *Pousargues, Mém. Soc. Zool. France*, vol. xi, p. 173, 1898; *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 73, 1907; *Bentham, Cat. Asiat. Horns Ind. Mus.* p. 52, 1908; *Pocock, Proc. Zool. Soc.* 1910, p. 898; *Lotichius, Ber. Senckenberg. Ges.* vol. xliii, p. 211, 1912.

Kemas hodgsoni, *Gray, List Mamm. Brit. Mus.* p. 157, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *Cat. Hodgson Coll.* p. 26, 1846, ed. 2, p. 13, 1863, *List Osteol. Brit. Mus.* p. 55, 1847, *Knowsley Menagerie*, p. 3, 1850, *Proc. Zool. Soc.* 1850, p. 112; *Horsfield, Cat. Mamm. E. India Mus.* p. 166, 1851; *Blanford, Journ. Asiat. Soc. Bengal*, vol. xli, pt. 2, p. 39, 1872.

Chiru.

Typical locality Hundes district of Tibet.

Shoulder-height about 31 or 32 inches; coat very dense, close, and crisp; general colour pale fawn, with a fulvous or pinkish suffusion, especially on the flanks, gradually passing into whitish on under-parts; face of male blackish, and crown of head whitish; ears short and pointed, whitish; backs of ears white; limbs pale greyish white, with a blackish stripe down front surface of each pair in male; tail coloured above like rump. Basal length of skull about $10\frac{1}{4}$ inches. Fine horns measure from 24 to $27\frac{3}{4}$ inches in length, with a basal girth of from $4\frac{3}{4}$ to $6\frac{1}{8}$, and a tip-to-tip interval ranging from 11 to $18\frac{1}{4}$ inches.

The range probably includes the whole Tibetan plateau, at elevations from about 12,000 to 18,000 feet, and is known to extend from the Changchenmo district of north-eastern Ladak, through the elevated area north of Kumaon and Sikhim, and so on to northern Tibet.

43. 1. 12. 100. Skin, mounted. Hundes district, Tibet. *Presented by B. H. Hodgson, Esq.*, 1843.

[45. 1. 8. 136. Single horn; length $27\frac{3}{4}$ inches. Same locality. *Same donor*, 1845.]

45. 1. 8. 136. Imperfect skull, with horns. Same locality. *Same history.*

614, *a*. Horns. Tibetan frontier of Nepal. *Presented by Major Honeywood.*

56. 9. 22. 19. Skeleton, imperfect. Probably from Ladak; collected by Gen. Abbott. *Purchased*, 1856.

614, *a*. Frontlet and horns. Locality unknown. Figured in Gray's *Cat. Ungulata*, pl. iii. *No history.*

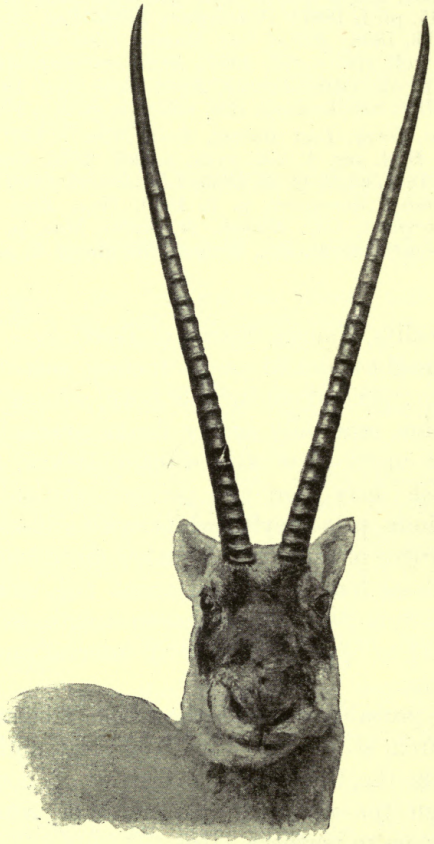

Fig. 4.—Head of Chiru (*Pantholops hodgsoni*).

75. 3. 30. 1. Skull and skin, female. Ladak.
Presented by Lieut.-Col. J. Biddulph, 1875.

79. 11. 21. 18. Skull, with horns. Locality unknown.
Transferred from the India Museum, 1879.

79. 11. 21. 589. Skin, immature. Hundes district; collected by B. H. Hodgson, Esq. *Same history.*

88. 3. 20. 17. Skull, with horns. Changchenmo, N. E. Ladak. *Presented by R. Lydekker, Esq.*, 1888.

91. 10. 7. 170. Skin, mounted. Sikhim; collected by A. Mandelli, Esq. *Presented by Dr. W. T. Blanford*, 1891.

91. 10. 7. 171. Skull, with horns, and skin. Same locality and collector. *Same history.*

91. 11. 15. 2–3. Two skins, male and female. Ladak. *Presented by H. C. V. Hunter, Esq.*, 1891.

91. 8. 7. 63. Skull, with horns. Northern Kumaon. *Presented by A. O. Hume, Esq., C.B.*, 1891.

91. 8. 7. 64–65. Two skulls, with horns. North of Leh; collected by Mr. A. Dalgleish. *Same history.*

91. 8. 7. 66–68. Three skulls, with horns. Northern Kumaon. *Same history.*

91. 8. 7. 69–70. Two skulls, with horns. Chantang Plateau; collected by Mr. Dalgleish. *Same history.*

91. 8. 7. 71. Skull, with horns. Beansi Pass, northern Kumaon; collected by Mr. N. Troup. *Same history.*

12. 10. 31. 20. Skull and horns, north of Beansi Pass, Kumaon; collected by Mr. Troup. This specimen stands No. 1 in Ward's list. Length of horns 27¾, girth 6⅛, tip-to-tip interval 13½ inches. *Bequeathed by A. O. Hume, Esq., C.B.*, 1912.

12. 10. 31. 21. Skull and horns. Same locality and collector. No. 3 in Ward's list. Length of horns 27⅛, girth 5⅞, tip-to-tip interval 15⅛. *Same history.*

12. 10. 31. 21. Skull and horns. Same locality and collector. *Same history.*

98. 10. 18. 1. Head, mounted. Ladák. *Presented by the Hon. Walter Rothschild*, 1898.

Subfamily xiv.—ANTILOPINÆ.

Includes a large number of, for the most part, gracefully built medium-sized or rather small antelopes, with the horns (which may be present or absent in females, and when developed in that sex are smaller and simpler than in males) either twisted in a heteronymous corkscrew-like spiral, or curved backwards in such a manner that the basal portion is

convex anteriorly, and in some cases more or less distinctly lyrate, always with well developed ridges; tail moderately or very short; nose normal and muzzle hairy; face-glands usually present; inguinal glands present or absent; teats usual 2, rarely 4; glandular knee-tufts generally present; lateral hoofs retained; feet with a large interdigital cleft, as in *Bubalinæ* (vol. ii, p. 2), and foot-glands in each pair, which form the deep cleft with a long aperture on the front of the pasterns, and the web extending forwards as a close fold of integument from the "heel" towards the front of the hoofs, so as to separate the cavity of the gland from the space between the hoofs; tail short or medium. Skull with supraorbital pits, and usually lachrymal depressions and lachrymal vacuities; upper molars, as in the three preceding subfamilies, of the tall, narrow, caprine type; three pairs of lower premolars, except in *Antidorcas*. Face-markings, which appear late in life, generally in the form of alternating light and dark streaks; these in some cases disappearing and leaving the whole face white.

The range of the subfamily includes south-eastern Europe, western and central Asia, the Indian Peninsula, and Africa.

The genera may be distinguished as follows:—

A. Horns twisted into a corkscrew-like spiral ..... *Antilope.*
B. Horns curving backwards, with the basal portion convex in front.
  a. No glandular pouch on back.
    a'. Neck normal; a pair of inguinal glands, except in *G. picticaudata*, and usually one pair of teats ..... *Gazella.*
    b'. Neck elongated; no inguinal glands; two pairs of teats ..... *Lithocranius.*
  b. A large glandular pouch, lined with long white eversible hairs, on back..... *Antidorcas.*

I. Genus ANTILOPE.

Antilope, *Pallas, Misc. Zool.* p. 1766; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 3, 1897; *Pocock, Proc. Zool. Soc.* 1910, p. 894.

Cervicapra, *Sparrman, K. Svenska Vet.-Ak. Handl.* vol. i, p. 275, 1780.

The typical genus, represented by a single medium-sized species. Horns (normally absent in female) twisted on their

axis into a heteronymous corkscrew-like spiral; face-glands very large; tail moderately short, compressed; inguinal glands present; teats, normally two; feet with the folded interungual web smooth and extending forwards nearly to the upper margins of the hoofs, the interdigital cleft being somewhat hairy; face-markings in the form of light rings round the eyes. Skull with large lachrymal depressions and three pairs of lower premolars.

The range is restricted to the Indian Peninsula.

ANTILOPE CERVICAPRA.

Capra cervicapra, *Linn.*, *Syst. Nat.* ed. 10, vol, i, p. 69, 1758, ed. 12, vol. i, p. 96, 1766.

Antilope cervicapra, *Pallas*, *Misc. Zool.* p. 9, 1766, *Spicil. Zool.* fasc. i, p. 18, 1767, fasc. xii, p. 19, 1777; *Erxleben*, *Syst. Regn. Anim.* p. 283, 1777; *Zimmermann*, *Spec. Zool. Geogr.* p. 542, 1779, *Geogr. Gesch.* vol. ii, p. 116, 1780; *Gatterer*, *Brev. Zool.* vol. i, p. 81, 1780; *Schreber*, *Säugthiere*, pl. cclxviii, 1785; *Boddaert*, *Elenchus Anim.* p. 142, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 192, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 319, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 644, 1792; *Latham and Davies*, *Faunula Indica*, p. 4, 1795; *Link*, *Beyträge Naturgesch.* vol. ii, p. 90, 1795; *Cuvier*, *Tabl. Élém. Hist. Nat.* p. 164, 1798, *Règne Anim.* vol. i, p. 261, 1817; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 644, 1800; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 366, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 116, 1802; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxiv, *Tabl.* p. 33, 1804, ed. 2, vol. ii, p. 180, 1816, *Mammalogie*, vol. ii, p. 451, 1822; *Tiedemann*, *Zool.* vol. i, p. 410, 1808; *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 172, 1814; *G. Fischer*, *Zoognosia*, vol. iii, p. 437, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Desmarest*, *Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 180, 1816, *Mammalogie*, vol. ii, p. 451, 1822; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1214, 1818; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 389, 1822, *Synop. Mamm.* vol. ii, p. 408, 1845, *Mon. Antilop.* p. 10, pl. lx, 1848; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 443, 1822; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 231, vol. v, p. 337, 1827; *Lesson*, *Man. Mamm.* p. 370, 1827, *Hist. Nat. Anim.* vol. x, p. 289, 1836, *Nouv. Tabl. Hist. Nat.* p. 175, 1842; *J. B. Fischer*, *Synop. Mamm.* p. 457, 1829; *Gray and Hardwicke*, *Illustr. Indian Zool.* vol. i, pls. xii and xiii, 1832; *Bennett*, *Gardens Zool. Soc.* vol. i, p. 117 1835, *Proc. Zool. Soc.* 1836, p. 34; *Owen*, *ibid.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Ogilby*, *Proc. Zool. Soc.* 1836, p. 137; *Oken*, *Allgemeine Naturgeschichte*, vol. vii, p. 1377, 1838; *Elliot*, *Madras Journ.* vol. x, p. 227, 1839; *Gervais*, *Dict. Sci. Nat.* vol. i, p. 620, 1840; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 620, 1841; *Hodgson*, *Journ. Asiat. Soc. Bengal*, vol. x, p. 913, 1841; *Forster*, *Descript. Anim.* p. 379, 1842; *Wagner*,

Schreber's Säugthiere, Suppl. vol. iv, p. 416, 1844, vol. v, p. 409, 1855; *Hutton, Journ. Asiat. Soc. Bengal*, vol. xv, p. 150, 1850; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 270, 1847; *Temminck, Esquiss. Zool. Guiné*, p. 190, 1850; *Giebel, Säugethiere*, p. 312, 1853–55; *Kinloch, Large Game Shooting*, p. 59, 1869, ed. 2, p. 112, 1885; *Blanford, Journ. Asiat. Soc. Bengal*, vol. xliv, pt. 2, p. 19, 1875, *Fauna Brit. India, Mamm.* p. 521, 1891; *Ball, Proc. Asiat. Soc. Bengal*, 1877, p. 171; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 198, 1880; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 266, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 137, 1889, *Cat. Mamm. Leyden Mus.* (*ibid.* vol. xi) p. 169, 1892; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 162, 1891; *Flower and Lydekker, Study of Mammals*, p. 340, 1891; *Ward, Records of Big Game*, p. 95, 1892, ed. 6, p. 235, 1910, ed. 7, p. 235, 1907; *Lydekker, Horns and Hoofs*, p. 152, 1893, *Great and Small Game of India*, p. 159, 1900, *Game Animals of India*, etc. p. 175, 1907, *Cat. Hume Bequest Brit. Mus.* p. 28, 1913; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 5, pl. xlviii, 1897; *Lönnberg, Acta Soc. Upsal.* ser. 3, 1903, p. 1; *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 71, 1907; *Bentham, Cat. Asiat. Horns Ind. Mus.* p. 48, 1908; *Pocock, Proc. Zool. Soc.* 1910, p. 894; *Wroughton, Journ. Bombay Nat. Hist. Soc.* vol. xxi, pp. 410 and 1193, 1912.

Antilope rupicapra, *Müller, Natursyst., Suppl.* p. 56, 1776 (ex *l'Antilope, Buffon, Hist. Nat.* vol. xii, p. 273, pls. xxxv and xxxiv, 1764).

Cervicapra [cervicapra], *Sparrman, K. Svenska Vet.-Ak. Handl.* vol. i, p. 275, 1780.

Cemas strepsiceros, *Oken, Lehrbuch Naturgeschichte*, vol. iii. pt. 2, p. 732, 1816.

Cerophorus (Antilope) cervicapra, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Antilope bilineata, *Gray and Hardwicke* (ex *Linn.*) *Illustr. Indian Zool.* pl. xii, 1832.

Strepsiceros cervicapra, *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. i, p. 39, 1842.

Cervicapra bezoartica, *Gray, List Mamm. Brit. Mus.* p. 159, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *Cat. Mamm. Hodgson Coll.* p. 26, 1846, ed. 2, p. 13, 1863, *List Osteol. Brit. Mus.* p. 56, 1847, *Knowsley Menagerie*, p. 6, 1850; *Horsfield, Cat. Mamm. E. India Mus.* p. 167, 1851; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 234, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 162, 1869.

Antilope bezoartica, *Gray, Proc. Zool. Soc.* 1850, p. 117, *Cat. Ungulata Brit. Mus.* p. 66, 1852, *Cat. Ruminants Brit. Mus.* p. 40, 1872, *Hand-List Ruminants Brit. Mus.* p. 109, 1873; *Jerdon, Mamm. India*, p. 275, 1867; *Blanford, Journ. Asiat. Soc. Bengal*, vol. xxxvi, pt. 2, p. 196, 1867; *McMaster, Notes on Jerdon*, pp. 134 and 298, 1870; *Stoliczka, Journ. Asiat. Soc. Bengal*, vol. xli, pt. 2, p. 229, 1872; *Pollok, Sport in Brit. Burma*, p. 50, 1879; *Sterndale, Mamm. India*, p. 472, 1884; *Percy, Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 345, 1894.

HERAN, or BLACKBUCK.

Typical locality plains of peninsular India, to which area the species is restricted.

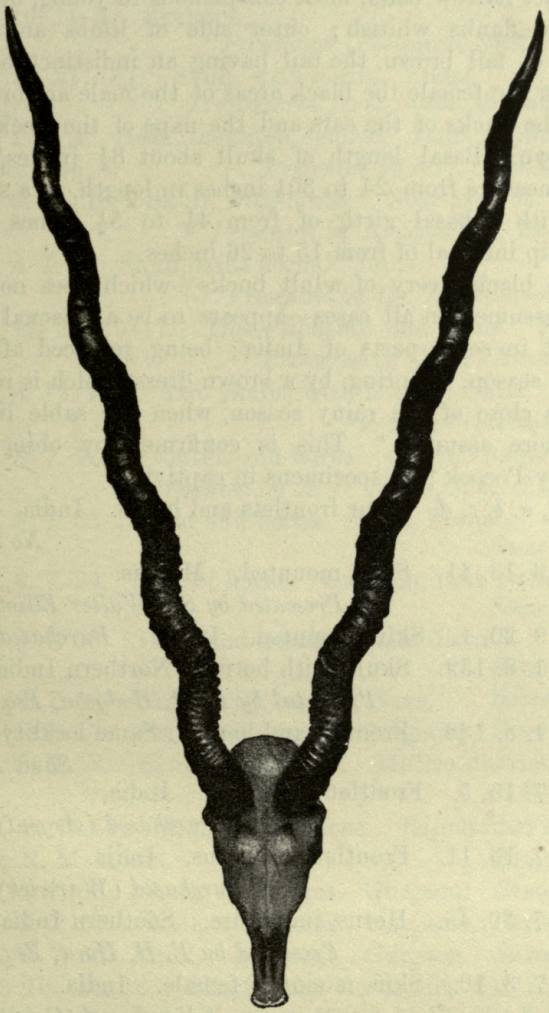

FIG. 5.—SKULL AND HORNS OF BLACKBUCK (*Antilope cervicapra*).

Shoulder-height about 30 inches. General colour of adult male brownish fawn, gradually darkening—at least in certain individuals and for some portion of the year—to deep

shining black; muzzle, chin, a patch round eyes, ears, chest, under-parts, inner sides of legs, and under side of tail, white; back of neck, especially in the black phase, yellowish; an indistinct narrow band, most conspicuous in young, on upper parts of flanks whitish; outer side of limbs and upper surface of tail brown, the tail having an indistinct blackish tip. In the female the black areas of the male are brownish fawn, the backs of the ears and the nape of the neck being also fawn. Basal length of skull about 8¼ inches. Fine horns measure from 24 to 30½ inches in length, in a straight line, with a basal girth of from 4½ to 5½ inches, and a tip-to-tip interval of from 15 to 26 inches.

The black livery of adult bucks—which does not seem to be assumed in all cases—appears to be a seasonal phase, at least in some parts of India; being replaced after the rutting season, in spring, by a brown dress, which is retained till the close of the rainy season, when the sable livery is once more assumed.* This is confirmed by observations made by Pocock † on specimens in captivity.

620, *a. b. c. d.* Four frontlets and horns. India.
No history.

38. 3. 13. 41. Skin, mounted. Madras.
Presented by Sir Walter Elliot, 1838.

42. 9. 20. 1. Skin, mounted. India. *Purchased*, 1842.

45. 1. 8. 139. Skull, with horns. Northern India.
Presented by B. H. Hodgson, Esq., 1845.

45. 1. 8. 138. Frontlet and horns. Same locality.
Same history.

47. 7. 19. 5. Frontlet and horns. India.
Purchased (*Argent*), 1847.

48. 7. 13. 11. Frontlet and horns. India.
Purchased (*Warwick*), 1848.

48. 7. 30. 45. Horns, immature. Southern India.
Presented by F. H. Hora, Esq., 1848.

51. 7. 3. 10. Skin, mounted, female. India.
Purchased (*Cross*), 1851.

56. 5. 6. 66. Skull, immature, female. India; collected by W. Theobald, Esq. *Presented by Dr. T. Oldham*, 1856.

* See Lydekker, *Game Animals of India*, p. 178.
† *Proc. Zool. Soc.* 1913, p. 825, footnote.

58. 5. 4. 600. Skull, young, female.
Purchased (*Zoological Society*), 1858.

60. 4. 22. 3. Skull, female. Zoological Society's Museum.
Purchased (*Stevens*), 1860.

62. 10. 11. 4. Skeleton.
Purchased (*Zoological Society*), 1862.

79. 11. 21. 187. Skull, with horns. India.
Transferred from India Museum, 1879.

87. 2. 9. 2. Head, mounted, female. India; collected by A. Grote, Esq. *Presented by Mrs. Stirling*, 1887.

88. 3. 20. 18. Skull, with horns. Near Meerut.
Presented by R. Lydekker, Esq., 1888.

89. 4. 1. 3. Skull, with horns. India.
Presented by Dr. H. Cameron, 1889.

89. 11. 20. 15–17. Three frontlets and horns. Indore.
Presented by Col. J. Evans, 1889.

91. 8. 12. 1–2. Two skulls, with horns. India.
Purchased (*Stevens*), 1891.

91. 8. 7. 52. Frontlet and horns. Jaipur, Rajputana.
Presented by A. O. Hume, Esq., C.B., 1891.

91. 8. 7. 53. Head and horns. Sirsa, Punjab.
Same history.

91. 8. 7. 54. Pair of horns. Gurgaon, near Delhi.
Same history.

91. 8. 7. 55. Head and horns. Delhi district.
Same history.

91. 8. 7. 56. Skull, with horns. Sirsa. *Same history.*

91. 8. 7. 57. Skull, with horns. Gurgaon. *Same history.*

91. 8. 7. 58. Skull, with horns. Muttra district.
Same history.

91. 8. 7. 59. Skull, with horns. Rajputana; collected by Mr. R M. Adam. *Same history.*

91. 8. 7. 60. Skull, with horns. Gurgaon. *Same history.*

91. 8. 7. 61. Skull, with horns. Gurgaon. *Same history.*

91. 8. 7. 62. Skull, with horns. Gurgaon. *Same history.*

12. 10. 31. 18. Skull, with horns (fig. 5). Gurgaon. In this specimen, which stands No. 3 in Ward's list, and is figured on p. 13, of vol. iii of *The Book of Antelopes*, the horns measure 28½ inches in a straight line, with a girth of 5 inches, and a tip-to-tip interval of 17¾ inches.
Bequeathed by A. O. Hume, Esq., C.B., 1912.

12. 10. 31. 17. Skull, with horns. Sirsa; shot by Mr. Hume. Stands No. 13 in Ward's list. The horns measure 26⅜ inches in length, by 5 in girth, with a tip-to-tip interval of 17⅞ inches. *Same history.*

12. 10. 31. 19. Skull, with horns. Gurgaon; collected by Mr. Chill. *Same history.*

12. 10. 31. 26. Skull, with horns, female. Gurgaon. The horns, as shown in the figure on p. 14 of vol. iii of *The Book of Antelopes*, bend outwards and downwards in a homonymous curve, the first turn being continued to form a regular curve, instead of being twisted upwards and inwards to form a heteronymous spiral as in normal male horns.* *Same history.*

92. 7. 14. 1. Skin, mounted. Gwalior. *Presented by C. Maries, Esq.*, 1892.

96. 6. 18. 1. Skin, mounted, female. India. *Purchased* (*Gerrard*), 1896.

96. 11. 23. 2. Skin, mounted, female. India. *Presented by J. Rowland Ward, Esq.*, 1896.

98. 6. 3. 1. Skull, with horns, and head-skin. Kathiawar. *Presented by Lieut.-Col. L. L. Fenton*, 1898.

98. 6. 3. 1. Skull and head-skin, albino female. Kathiawar. *Same history.*

II. Genus GAZELLA.

Gazella, *Lichtenstein, Mag. nat. Freunde*, vol. vi, pp. 152 and 171, 1814; *Brooke, Proc. Zool. Soc.* 1873, p. 537; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 65, 1898; *Pousargues, Mém. Soc. Zool. France*, vol. xi, p. 176, 1898; *Pocock, Proc. Zool. Soc.* 1910, p. 887.

Gacella, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 76, 1907.

Horns generally present in both sexes, and in the male strongly ridged all round, usually of moderate length, and, with the exception of the smooth tips, curving backwards, so as to be convex anteriorly in the basal portion, and concave in the middle portion, while the tips are generally bent forwards or inwards, the whole form being in some cases

* See the figure (18) facing p. 17 in Theodore Cook's *Spirals in Nature and Art*, 1903.

more or less sublyrate or lyrate; face-glands usually present, smaller than in typical genus, but with same valvular structure; tail moderately or very short; inguinal glands generally present; teats normally 2; feet differing from those of *Antilope* by the hairy and thinner interungual web, and the practically bare interdigital cleft; face-markings, when fully developed, in the form of alternate light and dark streaks. Skull usually with shallow lachrymal depressions, and always three pairs of lower premolars (in *G. picticaudata* the development of the first pair, according to Pousargues, is retarded).

The range of the genus includes western and central Asia as far east as Mongolia and Kan-su, peninsular India, and northern and eastern Africa.

The genus may be divided into the following three groups:—

A. Tail typically very short; females hornless; face without alternating dark and light stripes; knee-tufts absent or rudimentary; rump-patch well developed.... *Procapra.*

B. Tail longer; females usually horned; face with or less developed dark and light alternating stripes; knee-tufts large.

a. Size small or medium; white of rump not intruding into fawn of body..... *Gazella.*

b. Size large; white of rump intruding more or less extensively into fawn of body..... *Nanger.*

The "keys" to the species are given under the headings of their respective subgenera.

1. Subgenus **PROCAPRA.**

Procapra, *Hodgson, Journ. Asiat. Soc. Bengal*, vol. xv, p. 334, 1846; *Pocock, Proc. Zool. Soc.* 1910, p. 892.

Tail very or comparatively short; rump-patch well developed; face-glands obsolete or small, as are also the lachrymal depressions for their reception, as well as the glandular tufts on the knees.

The group is restricted to Central Asia; and its members may be briefly characterised as follows:—

A. Face-glands and knee-tufts wanting; tail very short; rump-patch large; size small, the basal skull-length not exceeding 7 inches; horns strongly curved backwards.
  a. Horns not hooked at tips..... *G. picticaudata.*
  b. Horns strongly hooked inwards at tips..... *G. przewalskii.*

B. Small face-glands and knee-tufts present; tail longer; rump-patch smaller; size larger, the basal skull-length being about 9 inches; horns but slightly curved backwards and not markedly hooked at tips..... *G. gutturosa.*

I. GAZELLA (PROCAPRA) PICTICAUDATA.

Procapra picticaudata, *Hodgson*, *Journ. Asiat. Soc. Bengal*, vol. xv, p. 334, pl. ii, 1846, vol. xvi, p. 696, 1847; *Blyth*, *ibid.* vol. xvi, p. 725, 1847, *Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 173, 1863; *Gray*, *Proc. Zool. Soc.* 1850, p. 116, 1867, p. 245, *Cat. Ungulata Brit. Mus.* p. 55, 1852, *Cat. Ruminants Brit. Mus.* p. 38, 1872, *Hand-List Ruminants Brit. Mus.* p. 105, 1873; *Horsfield Cat. Mamm. E. India Mus.* p. 169, 1851; *Hooker*, *Himalayan Journals*, vol. ii, p. 157, 1854; *Adams*, *Proc. Zool. Soc.* 1858, p. 523; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 232, 1862; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien.* vol. lix, pt. 1, p. 161, 1869; *Kinloch*, *Large Game Shooting*, p. 10, 1869; *Blanford*, *Journ. Asiat. Soc. Bengal*, vol. xli, pt. 2, p. 39, 1873, *Proc. Zool. Soc.* 1876, p. 634; *Przewalski*, *Mongolia* (Russian ed.), p. 326, pl. ii, 1875, *Reisen in Tibet*, p. 110, 1884; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 136, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 167, 1892; *Pocock*, *Proc. Zool. Soc.* 1910, p. 893.

Antilope picticaudata, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. v, p. 408, 1855; *Przewalski*, *Mongolia* (*Morgan's Transl.*), vol. ii, p. 208, 1876.

Gazella picticaudata, *Brooke*, *Proc. Zool. Soc.* 1873, p. 547; *Sterndale*, *Mamm. India*, p. 467, 1884; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 161, 1891; *Blanford*, *Fauna Brit. India*, *Mamm.* p. 529, 1891, *Proc. Zool. Soc.* 1893, p. 449; *Flower and Lydekker*, *Study of Mammals*, p. 342, 1891; *Ward*, *Records of Big Game*, p. 120, 1892, ed. 6, p. 241, 1910; *Lydekker*, *Horns and Hoofs*, p. 183, 1893, *Great and Small Game of India*, *etc.* p. 173, 1900, *Game Animals of India*, *etc.* p. 189, 1907, *Cat. Hume Bequest Brit. Mus.* p. 30, 1913; *Percy*, *Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 342, 1894; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 71, pl. lii, 1898; *Pousargues*, *Mém. Soc. Zool. France*, vol. xi, p. 176, 1898; *Bentham*, *Cat. Asiat. Horns Ind. Mus.* p. 56, 1908; *Bailey*, *Journ. Bombay Nat. Hist. Soc.* vol. xix, p. 521, 1909; *Wallace*, *Big Game of Central and Western China*, p. 248, 1913.

Gazella picticauda, *Trouessart*, *Cat. Mamm.* vol. ii, p. 941, 1898–99.

Gacella picticaudata, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 76, 1907.

Gazella (Procapra) picticaudata, *Ward's Records of Big Game*, ed. 7, p. 238, 1914.

GOA, RAGOA, or ATA.

Typical locality Hundes district of Tibet.

Size relatively small, the shoulder-height being about 24 or 25 inches. Horns relatively long and slender, much compressed, and heavily ridged, arising vertically from skull, and then curving evenly and regularly backwards with but little divergence, the tips bending upwards and slightly inwards; no face-glands, inguinal glands, or knee-tufts; coat in winter close and thick, in summer short; general colour in winter pale fawn, darkening posteriorly, and becoming almost rufous near the large white rump-patch, which surrounds the root of the very short tail; in summer the general colour slaty grey; ears short, narrow, pointed, and well haired; under-parts white; limbs white or very pale fawn. Skull relatively broad, without distinct lachrymal depressions, and with relatively broad nasals, tapering evenly forwards; basal length about $6\frac{1}{2}$ inches. Good horns measure from 12 to $14\frac{1}{8}$ inches in length, with a basal girth of from $3\frac{1}{2}$ to $4\frac{3}{4}$, and a tip-to-tip interval of from 2 to $3\frac{3}{4}$ inches. The range extends from the high ranges of Spiti and the Changchenmo district of Ladak through the Tibetan plateau to Kan-su, Shen-si, and the Tatung-gol Valley, a tributary of the Hoang-ho, to the north of Koko Nor.

Pousargues regards this species as showing affinity with *Pantholops*, although in the absence of inguinal glands it is markedly different from that genus. The late appearance of the anterior lower premolar may foreshadow the loss of that tooth in *Pantholops*.

48. 6. 11. 19. Skull, with horns. Hundes district of Tibet. Type. *Presented by B. H. Hodgson, Esq.*, 1848.

48. 6. 11. 20. Skull, with horns, immature. Same locality. Figured in Hodgson's original description. *Same history.*

48. 6. 11. 21. Skull, with horns. Same locality. *Same history.*

52. 12. 15. 6. Skin. Tibet. *Purchased (Stevens)*, 1852.

52. 12. 15. 18. Skull, with horns. Tibet. *Same history.*

53. 8. 16. 18. Skull, with horns, and skin. Tibet. *Presented by B. H. Hodgson, Esq.*, 1853.

53. 8. 16. 18, *b*. Skin, mounted. Tibet. *Same history.*

56. 10. 1. 2. Skull, female. Inner Himalaya. *Purchased* (*Baker*), 1856.

79. 11. 21. 35. Pair of horns. Probably Ladak. *Transferred from India Museum*, 1879.

79. 11. 21. 332. Skull and skin, female. Probably Ladak. *Same history.*

88. 3. 20. 19. Skull, with horns. Changchenmo, Ladak. *Presented by R. Lydekker, Esq.*, 1888.

91. 11. 6. 1. Skull, with horns, and skin. Hills north of Sikhim; collected by L. Mandelli, Esq. *Presented by Dr. W. T. Blanford*, 1891.

91. 11. 6. 2. Skull and skin, immature female. Same locality and collector. *Same history.*

91. 8. 7. 81. Skull, with horns. Hills north of Kumaon. Length of horns $13\frac{1}{2}$, girth $3\frac{5}{8}$, tip-to-tip $5\frac{1}{4}$ inches. *Presented by A. O. Hume, Esq., C.B.*, 1891.

91. 8. 7. 82. Skull, with horns. Hills north of Sikhim; collected by L. Mandelli, Esq. *Same history.*

91. 8. 7. 83. Skull, with horns. Dhama Valley, north side of Beansi Pass; collected by Mr. N. Troup. *Same history.*

12. 10. 31. 27. Skull, with horns. Hills north of Kumaon. No. 18 in Ward's list. Length of horns $12\frac{7}{8}$, girth $3\frac{7}{8}$, tip-to-tip $4\frac{3}{4}$ inches. The record length is $14\frac{1}{8}$ inches. *Bequeathed by A. O. Hume, Esq., C.B.*, 1912.

12. 10. 31. 28. Skull, with horns. Dhama Valley; collected by Mr. N. Troup. *Same history.*

97. 5. 15. 1. Head, mounted. North-eastern Ladak. *Purchased* (*Ward*), 1897.

98. 10. 18. 2. Skin, mounted. N. E. Ladak. *Presented by the Hon. Walter Rothschild*, 1898.

II. GAZELLA (PROCAPRA) PRZEWALSKII.

Antilope gutturosa, *Przewalski, Mongolia* (*Russian ed.*), vol. i, p. 18, pl. i, fig. 1, 1875, *Morgan's English Transl. of same*, pp. 20 and 28, 1876, *Reisen in Tibet*, pp. 178, 243 and 252, 1884, nec *Pallas.*

Antilope cuvieri, *Przewalski, Cat. Coll.* (*Russian*) p. 110, 1888, nec *Ogilby.*

Gazella przewalskii, *Büchner*, *Mélanges Biol.* vol. xiii, p. 164, 1890; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 79, pl. liii, 1898; *Pousargues*, *Mém. Soc. Zool. France*, vol. xi, p. 182, 1908; *Lydekker*, *Game Animals of Europe*, *etc.* p. 193, 1901; *Ward*, *Records of Big Game*, ed. 6, p. 243, 1910; *Wallace*, *Big Game of Central and Western China*, p. 248, 1913.

Procapra (?) przewalskii, *Pocock*, *Proc. Zool. Soc.* 1910, p. 892.

Typical locality Mongolia.

Nearly allied to the preceding species—with which it agrees in the absence of facial and inguinal glands and knee-tufts—but of rather larger size. Horns shorter, curving

Fig. 6.—Head of Przewalski's Gazelle (*Gazella przewalskii*), in Winter Coat.

From a photograph lent by Mr. G. Fenwick-Owen.

evenly backwards, with the tips abruptly hooked inwards and slightly upwards (fig. 6); general colour in the thick winter coat pale finely grizzled fawn, in summer deep fawn; sides of neck and tip of nose brownish in summer; a narrow

line of fawn running from the back to the upper surface of the tail divides the white rump-patch; limbs more or less brown in front. Skull generally similar to that of the preceding species, but rather larger, the basal length being about 7 inches. In No. 97. 2. 26. 14 the horns measure $10\frac{1}{4}$ inches in length, with a basal girth of $4\frac{3}{8}$, and a tip-to-tip interval of $2\frac{3}{8}$ inches.

The range apparently extends from Eastern Turkestan to the Gobi and Kan-su.

94. 2. 8. 5. Skull, with horns, and skin. Eastern Turkestan. Reference to this species provisional.

Presented by St. George Littledale, Esq., 1894.

97. 2. 26. 14. Skull, with horns, and skin. Koko Mountains, Kan-su, W. China.

Presented by the St. Petersburg Museum, 1897.

97. 2. 26. 15. Skin, female. Kan-su. *Same history.*

III. GAZELLA (PROCAPRA) GUTTUROSA.

Caprea campestris gutturosa, *Gmelin*, *Nov. Comm. Petrop.* vol. v, p. 347, pl. v, 1760.

Antilope gutturosa, *Pallas*, *Spicil. Zool.* fasc. xii, p. 46, pl. ii, 1777, *Zoogr. Rosso-Asiat.* vol. i, p. 251, 1811; *Zimmermann*, *Geogr. Geschichte*, vol. ii, p. 120, 1780; *Hermann*, *Tabl. Affin. Anim.* p. 108, 1783; *Boddaert*, *Elenchus Anim.* p. 143, 1785; *Schreber*, *Säugthiere*, pl. cclxxv, 1787; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 186, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 310, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 627, 1792; *Latham and Davies*, *Faunula Indica*, p. 4, 1795; *Link*, *Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 645, 1800; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 342, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 113, 1802; *Cuvier*, *Dict. Sci. Nat.* vol. ii, p. 228, 1804, *Règne Animal*, vol. i, p. 260, 1817; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxii, p. 499, vol. xxiv, *Tabl.* p. 33, 1804, ed. 2, vol. ii, p. 182, 1816, *Mammalogie*, vol. ii, p. 452, 1822; *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 171, 1814; *G. Fischer*, *Zoognosia*, vol. iii, p. 431, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1221, 1818; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 387, 1821, *Synop. Mamm.* vol. ii, p. 409, 1845, *Mon. Antilop.* p. 11, pl. x, 1848; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 441, 1822; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 229, vol. v, p. 336, 1827; *Lesson*, *Man. Mamm.* p. 371, 1827, *Nouv. Tabl. Règne Anim.* p. 176, 1842; *J. B. Fischer*, *Synop. Mamm.* p. 458, 1828; *Owen*, *Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Oken*, *Allgemeine Naturgeschichte*, vol. vii, p. 1267, 1838; *Gervais*, *Dict. Sci. Nat.*, *Suppl.* vol. i, p. 260, 1840; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 615, 1841;

Wagner, Schreber's Säugthiere, Suppl. vol. iv, p. 416, 1844, vol. v, p. 408, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 104, pl. xxxi, fig. 180, 1845; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 270, 1847; *Giebel, Säugethiere*, p. 312, 1853–55; *Radde, Reisen Ost-Siberien*, p. 254, pl. xi, fig. 1, 1862; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 201, 1880.

Antilope tzeiran, *Zimmermann, Spec. Zool. Geogr.* p. 543, 1817.

Antilope orientalis, *Erxleben, Syst. Regn. Anim.* p. 288, 1777; *Gatterer, Brev. Zool.* vol. i, p. 82, 1780; *Desmarest, Nouv. Dict. Hist. Nat.* vol. xxiv, *Tabl.* p. 33, 1804.

Cerophorus (Antilope) gutturosa, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Cemas gutturosa, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 736, 1816.

Gazella gutturosa, *Gray, Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *List Osteol. Brit. Mus.* p. 57, 1847, *Knowsley Menagerie*, p. 3, 1850; *Brooke, Proc. Zool. Soc.* 1873, p. 546; *Przewalski, Mongolia* (*Russian ed.*), p. 73, 1875, partim; *Flower and Lydekker, Study of Mammals*, p. 342, 1891; *Ward, Records of Big Game*, p. 119, 1892, ed. 6, p. 243, 1910; *Lydekker, Horns and Hoofs*, p. 182, 1893, *Great and Small Game of Europe, etc.* p. 196, 1901; *Percy, Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 341, 1894; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 83, pl. liv, 1898; *Pousargues, Mém. Soc. Zool. France*, vol. xi, p. 179, 1898; *Köhler, Zool. Garten*, vol. xl, p. 336, 1899; *Wallace, Big Game of Central and Western China*, p. 253, 1913.

Procapra gutturosa, *Gray, Proc. Zool. Soc.* 1850, p. 115, 1867, p. 244, *Cat. Ungulata Brit. Mus.* p. 54, 1854, *Cat. Ruminants Brit. Mus.* p. 37, 1872, *Hand-List Ruminants Brit. Mus.* p. 105, 1873; *Gerrard, Cat. Bones Brit. Mus.* p. 232, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 161, 1869; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 266, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 136, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 167, 1892; *Hollister, Smithson. Misc. Collect.* vol. lx, no. 19, p. 1, 1913.

Procapra (?) gutturosa, *Pocock, Proc. Zool. Soc.* 1910, p. 892.

Gazella (Procapra) gutturosa *Ward's Records of Big Game*, ed. 7 p. 241, 1914.

Zeren, or Seren.

Typical locality Mongolia.

Size considerably larger than in last species, the shoulder-height being fully 30 inches, and the build stouter. Small face-glands, knee-tufts, and well-developed inguinal glands present; * rump-patch smaller, and not completely surrounding tail, which is longer (about $2\frac{3}{4}$ inches) than in the two preceding species; horns relatively short, lightly but closely

* *Vide* Pousargues, *op. cit.*; the face-glands and knee-tufts are shown in some of the under-mentioned skins.

ridged, rising nearly parallel, then diverging, without marked backward sweep, and a slight inward inclination at tips; general colour of thick and close winter coat pale ochery buff or grizzled fawn; front of face slaty brown; small

FIG. 7.—HEAD OF ZEREN OR MONGOLIAN GAZELLE (*Gazella gutturosa*), IN WINTER COAT.
From a photograph lent by Mr. G. Fenwick-Owen.

rump-patch, under-parts (exclusive of flanks), and tail, with the exception of a brownish patch on middle of upper surface, dirty white, as are also inner sides of legs and cheeks; ears moderate, pointed, and thickly haired; in summer the coat much shorter, and, according to Radde, yellower, although not much difference in this respect is shown by the specimens in the collection. Skull long and narrow, with rather elongated, pointed nasals and shallow

lachrymal depressions; basal length about 9¼ inches. Fine horns measure from 13 to 15¾ inches in length, with a basal girth of from 3⅛ to 5, and a tip-to-tip interval of from 4¼ to 7¼ inches.

In the rutting seasons the males develop a goitre-like swelling in the throat. The range formerly extended from the Little Altai, in north-western Mongolia, through the southern part of Transbaikalia and northern and eastern Mongolia to Amurland and Kan-su; it now stops considerably short of the Amur peninsula. This species is so largely intermediate in characters between *G. picticaudata* and *G. przewalskii* on the one hand and *G. subgutturosa* on the other as to render it inadvisable to give *Procapra* more than subgeneric rank.

So far as the specimens in the collection are concerned, the coloured figures in the *Book of Antelopes* are misleading, the hind-quarters, flanks, and limbs being represented as white, and the fawn area merely as a kind of saddle. Brooke's description is approximately true to nature.

If the Altai form be distinct, the following two races may be recognised:—

A. Fawn area smaller; horns less spreading; skull narrower..... *G. g. gutturosa.*

B. Fawn area larger; horns more spreading; skull broader..... *G. g. altaica.*

A.—Gazella gutturosa gutturosa.

General characters those of the species.

Typical locality eastern Mongolia.

67. 1. 8. 3–4. Two frontlets, with horns. Mongolia. The skull and horns, purporting to be one of these specimens, figured by Gray in the *Proc. Zool. Soc.* 1867, p. 215, pertains, as pointed out by Pousargues (*op. cit.*), to a gazelle with large lachrymal depressions, and therefore with equally large face-glands. Gray's figure is reproduced in the *Book of Antelopes*, vol. iii, p. 87. *Presented by Dr. Lockhart*, 1867.

70. 2. 10. 37. Skull, with horns, and skin in winter coat. North of Pekin; collected by R. Swinhoe, Esq. Length of horns 9¾, girth 4, tip-to-tip interval 4⅝ inches.

Purchased, 1870.

70. 2. 10. 95. Skull, with horns. Same locality and collector. *Same history.*

70. 2. 10. 96. A similar specimen. Same locality and collector. *Same history.*

70. 7. 18. 13. Skull and skin in winter coat. Northern China; same collector. *Same history.*

FIG. 8.—ALTAI ZEREN GAZELLE (*Gazella* [*Procapra*] *gutturosa altaica*) IN SUMMER COAT.

1. 3. 2. 2. Skull, with horns, and skin. North of Pekin; collected by F. W. Styan, Esq. *Purchased*, 1901.

1. 3. 2. 3. Skull and skin, female, in winter coat. Same locality and collector. *Same history.*

11. 2. 1. 266. Skull, with horns, and skin, immature. Thirty miles N.W. of Jan-chou, Kan-su; collected by M P. Anderson, Esq.

Presented by the Duke of Bedford, K.G., 1911.

B.—Gazella gutturosa altaica.

Procapra altaica, *Hollister*, *Smithson. Misc. Collect.* vol. lx, no. 19, p. 1, 1913, *Proc. U.S. Nat. Mus.* vol. xlv, p. 531, pls. xli and xlii, 1913.

Typical locality Suok Plains, near south end of Bain-Chagan Pass, Little Altai, N. W. Mongolia.

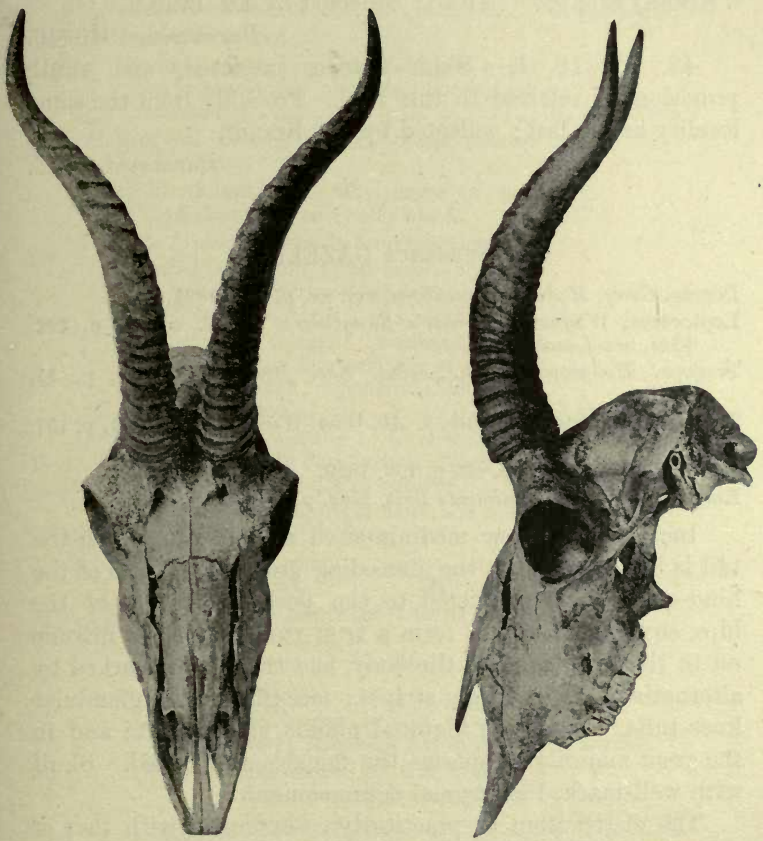

FIG. 9.—FRONT AND SIDE VIEWS OF SKULL AND HORNS OF ALTAI ZEREN GAZELLE (*Gazella* [*Procapra*] *gutturosa altaica*).
From Hollister, *Smithson. Misc. Collect.* 1913.

Type in U.S. National Museum.

Stated to differ from typical *gutturosa*, in summer coat, by the greater extent of the fawn area (apparently on the

flanks), the broader skull, larger molar teeth, and more widely spreading horns (fig. 9).

10. 1. 25. 1. Skin, in summer coat, mounted (fig. 8), Altai. The colour-pattern agrees very closely with that of the type, and the "spike-like" tail shows the same brown dorsal spot. *Presented by R. Hayne, Esq.*, 1910.

46. 3. 28. 6 (45. 4. 29. 7). Skull, with horns, and skin. "Kirghiz Steppes" (Altai); collected by Dr. Brandt.

Purchased, 1845–46.

43. 12. 19. 1. Skin, female, mounted, and skull, provisionally referred to this race. Probably from the same locality as the last; collected by Dr. Brandt.

Purchased, 1843.

2. Subgenus GAZELLA.

Dorcas, *Gray, Medical Repository*, vol. xv, p. 307, 1821.

Leptoceros, *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 422, 1844, nec *Leach*, 1817.

Tragops, *Hodgson, Journ. Asiat. Soc. Bengal*, vol. xvi, p. 11, 1847.

Tragopsis, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 157, 1869.

Eudorcas, *Fitzinger, op. cit.* p. 159, 1869.

Korin, *Gray, Cat. Ruminants Brit. Mus.* p. 39, 1872.

Includes small or medium-sized gazelles, in which the tail is longer than in the preceding group, the white of the hind-quarters is restricted to the posterior aspect of the hips, so that it does not form a true rump-patch, or intrude on to the fawn area of the body, and the face is marked by alternating dark and light stripes; face-glands and glandular knee-tufts,* as well as inguinal glands, are present; and in the great majority of species the females are horned. Skull with well-marked lachrymal depressions.

The distribution is practically co-extensive with that of the genus.

The following is a tentative "key" to the species:—

A. Females hornless; males with a "goitre"; white area on buttocks relatively large.

a. Face-markings partially obsolete ..... *G. subgutturosa.*

* The alleged absence of knee-tufts in *G. rufifrons* is denied by Pocock.

b. Face-markings distinct; size larger.

a[1]. White area on buttocks larger; forehead and muzzle rufous ..... *G. yarkandensis.*

b[1]. White area on buttocks smaller; forehead greyish, muzzle white..... *G. seistanica.*

B. Females horned; no goitre in males; white area on buttocks usually smaller.

a. No puffy elevation on nose.

a[1]. Forehead white ..... *G. marica.*

b[1]. Forehead coloured.

a[2]. General colour very pale, flank and pygal bands practically obsolete; horns long and slender ..... *G. leptoceros.*

b[2]. General colour darker; horns shorter and stouter.

a[3]. Flank-band generally more or less indistinct, never wholly black.

a[4]. A more or less distinct nose-spot.

a[5]. Flank-band, pygal band, and nose-spot faint and ill-defined; coat smooth.

a[6]. Size larger; forehead light rufous, lips and tip of muzzle whitish; horn-tips slightly inturned ..... *G. fuscifrons.*

b[6]. Size smaller; forehead and muzzle dark rufous; horn-tips not perceptibly inturned ..... *G. bennetti.*

b[5]. Flank-band, pygal band, and nose-spot much darker.

a. Coat rough; horns nearly straight.

a[1]. Size larger (26–7 in. at shoulder) ..... *G. cuvieri.*

b[1]. Size much smaller..... *G. gazella.*

b. Coat smooth.

a[2]. Size larger (24–5 in. at shoulder); horn-tips not inturned *G. arabica.*

b[2]. Size smaller (21–2 in. at shoulder); horn-tips strongly inturned ..... *G. muscatensis.*

b[4]. Nose-spot variable, often absent.

a. Nose-spot usually present; general colour rufous fawn; flank-band dusky rufous; horns short, with tips hooked inwards; size smaller..... *G. littoralis.*

b. Nose-spot usually absent; general colour sandy fawn; flank-band indistinct; horns

longer, with tips hooked upwards and forwards..... *G. dorcas.*
c. Nose-spot wanting ..... *G. pelzelni.*
*b*³. Flank-band black.
a. Horns abruptly inturned at tips ..... *G. tilonura.*
b. Horns not abruptly inturned at tips.
*a*¹. No nose-spot; forehead and muzzle rufous; light face-stripes buff; flank-band narrow.
*a*². Size smaller..... *G. rufifrons.*
*b*². Size larger..... *G. rufina.*
*b*¹. A black nose-spot; light face-stripes white; flank-band broad.
*a*³. Median face-stripe dark throughout..... *G. albonotata.*
*b*³. Median face-stripe interrupted by a whitish patch on forehead *G. thomsoni.*
b. Nose with a soft puffy elevation ..... *G. spekei.*

IV. GAZELLA SUBGUTTUROSA.

Antilope subgutturosa, *Güldenstädt, Acta Ac. Sci. Petrop.* 1778, pt. 1, p. 251, 1780; *Schreber, Säugthiere*, pl. cclxx B, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 186, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 311, 1792; *Donndorff, Zool. Beyträge*, vol. i, p. 628, 1792; *Link, Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Bechstein, Übersicht vierfüss. Thiere*, vol. ii, p. 645, 1800; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 343, 1801; *Turton, Linn.'s Syst. Nat.* p. 113, 1802; *Cuvier, Dict. Sci. Nat.* vol. ii. p. 227, 1804; *Pallas, Zoogr. Rosso-Asiat.* vol. i, p. 252, 1811; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Desmarest, Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 185, 1816, *Mammalogie*, vol. ii, p. 542, 1822; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1196, 1818; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 210, vol. v, p. 331, 1827; *Lesson, Man. Mamm.* p. 372, 1827, *Hist. Nat. Anim.* vol. x, p. 287, 1836, *Nouv. Table Règne Anim., Mamm.* p. 176, 1842; *J. B. Fischer, Synop. Mamm.* p. 460, 1829; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Hohenacker, Bull. Soc. Moscow*, vol. viii, p. 137, 1837; *Ménétriés, Cat. raison. Zool. Caucas*, p. 24, 1837; *Oken, Allgemeine Naturgeschichte*, p. 1268, 1838; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 261, 1840; *Démidoff, Voyage Russ. Mérid.* vol. iii, p. 61, 1840; *Eichwald, Fauna Caspio-Caucas*, p. 39, 1841; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 406, 1844, vol. v, p. 404, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 114, pl. xxxiv, 1845; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 269, 1847; *Giebel, Säugethiere*, p. 307, 1853–55; *de Filippi, Viaggio in Persia*, p. 344, 1865; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 160, 1869; *Radde Säugeth. Talysch*, p. 10, 1886.

Antilope (Gazella) subgutturosa, *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 171, 1814.

Cerophorus (Gazella) subgutturosa, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Gazella subgutturosa, *Gray*, *List. Mamm. Brit. Mus.* p. 160, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *Knowsley Menagerie*, p. 4, 1850, *Proc. Zool. Soc.* 1850, p. 113, *Cat. Ungulata Brit. Mus.* p. 58, 1852, *Cat. Ruminants Brit. Mus.* p. 38, 1872, *Hand-List Ruminants Brit. Mus.* p. 107, 1873; *Hutton*, *Journ. Asiat. Soc. Bengal*, vol. xv, p. 151, 1846; *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853; *Blyth*, *Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 172, 1863; *Wolf*, *Zool. Sketches*, pl. xxii, 1861–67; *Sclater*, *Proc. Zool. Soc.* 1869, p. 602, 1886, p. 2; *Blanford*, *Zool. Abyssinia*, p. 261, 1870, *Proc. Zool. Soc.* 1873, p. 313, *Eastern Persia*, vol. ii, p. 91, 1876, *Fauna Brit. India*, *Mamm.* p. 528, 1891; *Brooke*, *Proc. Zool. Soc.* 1873, p. 545; *Przewalski*, *Mongolia* (*Russian ed.*), p. 141, pl. i, fig. 2, 1875, *Morgan's Transl. of same*, vol. i, p. 207, 1876; *Severtzow*, *Ann. Mag. Nat. Hist.* ser. 4, vol. xviii, p. 170, 1876; *Danford and Alston*, *Proc. Zool. Soc.* 1877, p. 276, 1880, p. 55; *Sterndale*, *Mamm. India*, p. 466, 1884; *Scully*, *Journ. Asiat. Soc. Bengal*, vol. lvi, pt. 2, p. 56, 1887; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 137, 1887, *Cat. Mamm. Leyden Mus.* (*ibid.* vol. xi) p. 168, 1892; *Thomas*, *Trans. Linn. Soc.* ser. 2, vol. v, p. 64, 1889; *Büchner*, *Mélanges Biol.* vol. xiii, p. 160, 1890; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 160, 1891; *Ward*, *Records of Big Game*, p. 118, 1892, ed. 6, p. 246, 1910, ed. 7, p. 242, 1914; *Lydekker*, *Horns and Hoofs*, p. 180, 1893, *Great and Small Game of India*, *etc.* p. 176, 1900, *Game Animals of India*, *etc.* p. 192, 1907, *Cat. Hume Bequest*, *Brit. Mus.* p. 31, 1913; *Percy*, *Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 342, 1892; *Satunin*, *Zool. Jahrb.*, *Syst.* vol. ix, p. 310, 1896, *Mitt. Kaukas. Mus.* vol. ii, pp. 212 and 359, 1906, vol. iv, pp. 66 and 116, 1908, vol. vii, p. 84, 1912, *Ochotn. vést.* vol. viii, p. 10, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 89, pl. lv, 1898; *Pousargues*, *Mém. Soc. Zool. France*, vol. xi, p. 185, 1898; *Bentham*, *Cat. Asiat. Horns Ind. Mus.* p. 54, 1908; *Cuming*, *Journ. Bombay Nat. Hist. Soc.* vol. xvi, p. 503, 1905; *Pocock*, *Proc. Zool. Soc.* 1910, p. 887.

Antilope dorcas *var.* persica, *Gray*, *List Mamm. Brit. Mus.* p. 160, 1843.

Gazella hillieriana *and* G. mongolica, *Heude*, *Mém. Hist. Nat. Emp. Chinois*, vol. ii, p. 245, pls. xxxvi and xxxvii, 1894.

Ahu; Goitred, or Persian, Gazelle.

Type of the genus.

Typical locality Persia; probably the Bussora district.

Size medium, the shoulder-height ranging from about 25 to 27 inches. Females without horns,* and males with a goitre-like swelling in the throat † during the rutting season;

* Rudiments may be developed.

† Due to an inflation of the larynx.

horns of medium length, thick, evenly diverging and curving backwards, with the tips distinctly, but not abruptly, turned inwards and slightly upwards; general colour in summer—when the coat is short—dark sandy fawn, or sandy rufous; in winter—when the coat is longer and rougher—much paler; face-markings indistinct, the median dark stripe fading into white with age, and the lateral stripes incomplete; ears medium, short-haired even in winter; an indistinct dark flank-band, and a rather more pronounced pygal band; white area of buttocks rather large; tail crested and blackish brown. Skull stout, with short and broad nasals; basal length about $6\frac{3}{4}$ inches in Persian specimens.

The range extends from Asia Minor and the Caucasus through Syria, Persia, and Afghanistan to the Altai, probably also including Baluchistan.

A.—Gazella subgutturosa subgutturosa.

Gazella subgutturosa typica, *Lydekker*, *Great and Small Game of India, etc.* p. 180, 1900; *Ward*, *Records of Big Game*, ed. 6, p. 246, 1910.

Typical locality Persia, where this race occurs at elevations of from 3000 to 7000 feet.

Size relatively small—shoulder-height about 25 or 26 inches; horns proportionately long, good specimens measuring from 13 to $15\frac{3}{4}$ inches in length, with a basal girth of from 4 to 5 and a tip-to-tip interval ranging from 3 to $9\frac{1}{2}$ inches.

The range is taken to include Afghanistan.

50. 10. 21. 12. Skin, immature. Euphrates Valley.
Presented by the Euphrates Expedition, 1850.

74. 11. 21. 23. Skull, with horns. Ispahan, Persia.
Presented by Dr. W. T. Blanford, 1874.

86. 10. 15. 31. Head-skin, female. Gulran, Afghanistan; collected during the expedition of the Afghan Boundary Commission, 1884–85, by Dr. J. E. T. Aitchison.
Presented by the Government of India, 1886.

86. 10. 15. 32–33. Two pairs of horns. Galicha, Afghanistan; same collector. *Same history.*

0. 6. 8. 1. Skin, mounted, in winter coat. Near Tehran,

Persia. Figured in *Great and Small Game of India.* This is a small specimen, standing about 24 inches.

Presented by the Duke of Bedford, K.G., 1900.

130, *a*. Skin, mounted, female. Western Siberia; collected by Dr. Brandt. *Purchased.*

78. 12. 21. 26. Pair of horns. Saissan, W. Siberia; collected by Dr. O. Finsch. Length of horns 13¾, basal girth 4½, tip-to-tip interval 6 inches.

Presented by the Geographical Society of Bremen, 1878.

11. 8. 3. 2. Frontlet and horns apparently referable to this specie. Syria. *Presented by Mrs. Guy Bethell*, 1911.

*** Some or all of the undermentioned specimens may belong to *G. seistanica.*

71. 8. 7. 84. Skull, with horns. Kelat, Baluchistan; collected by Dr. Duke.

Presented by A. O. Hume, Esq., C.B., 1891.

91. 8. 7. 85. Skull, with horns. Pishin Valley, Kelat; collected by Col. Sir O. B. St. John, K.C.B. *Same history.*

12. 10. 31. 100. Skull and horns. Pishin Valley; collected by Col. Sir O. B. St. John. In this specimen, which stands No. 6 in Ward's 1910 list, the horns measure 13¼ inches in length by 4½ in girth, with a tip-to-tip interval of 4 inches.

Bequeathed by A. O. Hume, Esq., C.B., 1912.

12. 10. 31. 29. Skull and horns. Locality unknown. *Same history.*

B.—Gazella subgutturosa sairensis.

Gazella subgutturosa sairensis, *Lydekker, Great and Small Game of India, etc.* p. 184, 1900, *Game Animals of India, etc.* p. 196, 1907; *Ward, Records of Big Game*, ed. 6, p. 246, 1910; *Hollister, Smithson. Misc. Collect.* vol. lx, no. 19, p. 2, 1913.

Typical locality Saiar, or Jair, Mountains, Zungaria.

Larger than typical race, standing about 27 inches at the shoulder, but with smaller horns, of which the length is usually not more than from 10 to 11 inches, although one specimen measuring 13¾ inches is known.

90. 4. 20. 9. Skin, mounted, in summer coat. Saiar Mountains. Type.

Presented by St. George Littledale, Esq., 1890.

90. 4. 20. 10. Skin. Same locality. *Same history.*

90. 4. 20. 11. Skin and skeleton, female. Same locality. *Same history.*

90. 4. 20. 12. Skin, immature. Same locality. *Same history.*

12. 4. 1. 180. Skin. Southern Zungaria; collected by Douglas Carruthers, Esq. *Purchased*, 1912.

12. 4. 1. 183. Skull and skin, immature female. Same locality. *Same history.*

V. GAZELLA YARKANDENSIS.

Gazella gutturosa, *Forsyth*, *Proc. Zool. Soc.* 1874, p. 324, nec *Pallas*.

Gazella subgutturosa yarkandensis, *Blanford*, *Journ. Asiat. Soc. Bengal*, vol. xliv, pt. 2, p. 112, 1879, *Zool. 2nd Yarkand Mission*, *Mamm.* p. 88, pl. xv, 1879, *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 94, 1898; *Pousargues*, *Mém. Soc. Zool. France*, vol. xi, p. 187, 1898; *Lydekker*, *Great and Small Game of India*, *etc.* p. 180, 1900, *Game Animals of India*, *etc.* p. 196, 1907.

Gazella yarcandensis, *Lydekker*, *Nature*, vol. lxxxiii, p. 202, 1910, *Cat. Hume Bequest Brit. Mus.* p. 31, 1913; *Ward*, *Records of Big Game*, ed. 6, p. 247, 1910, ed. 7, p. 243, 1914.

Saikik, or Kik; Yarkand Gazelle.

Typical locality plains of Yarkand, Chinese Turkestan.

The specimen figured by Blanford, which cannot be definitely identified, must be regarded as the type. Resembles *subgutturosa* in the absence of horns in the females and the "goitre" in the throat of the males, but differs by its superior size — shoulder-height about 29 inches — well-developed face-markings, larger ears, and more sublyrate horns, which have comparatively few (about 14) ridges; the white area on the buttocks is, moreover, somewhat larger, extending upwards on each side of the root of the tail. General colour light rufous brown, or dark fawn; median dark face-stripe running right up forehead and splitting to terminate at base of each horn; between the light stripes, with the exception of a narrow streak, the greater part of

face, including muzzle, fawn-coloured, like back. Good horns measure from 13 to 17 inches in length, with a girth of from 4½ to 5, and a tip-to-tip interval of from 3 to 7¾ inches.

The range apparently includes the Kulja district of the Tien Shan.

91. 8. 7. 86. Skull, with horns. Plains of Yarkand; collected by Mr. A. Dalgleish.

Presented by A. O. Hume, Esq., C.B., 1891.

91. 8. 7. 87. Skull, with horns. Same locality and collector. *Same history.*

91. 8. 7. 88. Skull, with horns, immmature. Same locality and collector. *Same history.*

91. 8. 7. 90–92. Three skulls, with horns. Same locality and collector. *Same history.*

12. 10. 31. 30. Frontlet and horns. Same locality and collector. This specimen stands No. 2 in Ward's 1910 list. Length of horns 16, girth 15, tip-to-tip 3¼ inches. The record length is 17 inches.

Bequeathed by A. O. Hume, Esq., C.B., 1912.

12. 10. 31. 31. Skull, with horns. Same locality and collector. *Same history.*

12. 10. 31. 32. Skull, with horns. Same locality and collector. *Same history.*

92. 6. 2. 1. Skin. Aksu, Chinese Turkestan.

Presented by Major C. S. Cumberland, 1892.

12. 4. 1. 181. Skull, with horns. Hami, N. E. Chinese Turkestan; collected by Douglas Carruthers, Esq.

Purchased, 1912.

VI. GAZELLA SEISTANICA.

Gazella seistanica, *Lydekker, Nature*, vol. lxxxiii, p. 202, 1910; *Kennion, By Mountain, Lake, and Plain*, pp. 125 and 274, 1911; *Ward's Records of Big Game*, ed. 7, p. 244, 1914.

Typical locality Sistan (Seistan), Eastern Persia.

Closely related to the last, but distinguished by the smaller extent of white on the buttocks (fig. 10), the greyish forehead (especially in old individuals), the presence of a whitish band at base of horns, and the indistinct nose-

spot, below which the whole muzzle is white, as well as by the, apparently, somewhat larger ears. The horns, as in *yarkandensis*, bend backwards, with their tips more or less distinctly inturned. Probably a highland species.

10. 1. 22. 2. Skin, mounted, subadult male. Sistan. Type. *Presented by Lieut.-Col. R. L. Kennion*, 1910.

6. 1. 2. 13. Skull, with horns, and skin. Sistan. *Presented by the Government of India*, 1906.

FIG. 10.—SISTAN GAZELLE (*Gazella seistanica*).
From a photograph by Lieut.-Col. Kennion.

6. 1. 2. 14. Skull, with horns, immature. Sistan. *Same history.*

10. 12. 13. 1. Skull, with horns. Sistan. *Presented by Capt. C. T. Daukes*, 1910.

10. 12. 13. 2. Skull, with horns, immature. Sistan. *Same history.*

99. 6. 22. 1. Head, mounted, very old male. Helmund Valley, Baluchistan. *Presented by Capt. T. W. Greenfield*, 1899.

12. 4. 1. 82. Frontlet and horns. (?) Baluchistan; collected by Douglas Carruthers, Esq. *Purchased*, 1912.

VII. GAZELLA FUSCIFRONS.

Gazella fuscifrons, *Blanford*, *Proc. Zool. Soc.* 1873, p. 317, *Eastern Persia*, vol. ii, p. 92, 1876; *Brooke*, *Proc. Zool. Soc.* 1873, p. 545; *Sterndale*, *Mamm. India*, p. 465, 1884; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 160, 1891; *Lydekker*, *Nature*, vol. lxxxiii, p. 202, 1910; *Ward's Records of Big Game*, ed. 7, p. 245, 1914.

Gazella bennetti, *Blanford*, *Fauna Brit. India*, *Mamm.* p. 529, 1891; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 120, 1898; nec *Sykes*.

Gazella yarkandensis kennioni, *Lydekker*, *Field*, vol. cxi, p. 499, 1908.

Gazella hayi, *Lydekker*, *Proc. Zool. Soc.* 1911, p. 961.

It was the result of an unfortunate accident, namely the transposition of the registration labels of two gazelles received simultaneously at the British Museum, that a specimen of this gazelle was described as a new African species under the name *G. hayi*.

Typical locality Jalk, on the fringe of the Sistan (Seistan) Desert, Eastern Persia.

Type (the female head figured by Blanford) in Indian Museum, Calcutta.

Horns present in both sexes, and males without a "goitre" (as in all the following species). Apparently somewhat smaller than *seistanica* (shoulder-height probably about 28 inches), from which it is distinguished, in addition to the above characters, by the absence of marked inturning of the horns, the smaller size of the white area on the buttocks, and the light rufous fawn forehead and middle line of face, with only the lips and the extremity of the muzzle whitish; the flank and pygal bands being slightly darker than the general body-colour.

This species apparently inhabits elevations not exceeding 3000 feet; its distributional area including Sistan (Seistan) and probably part of Baluchistan.

8. 3. 12. 1. Head, mounted. Kain, Eastern Persia. Type of *G. yarkandensis kennioni*.

Presented by Lieut.-Col. R. L. Kennion, 1908.

10. 1. 22. 1. Skin, mounted, subadult, male (fig. 11). Sistan, Eastern Persia. Type of *G. hayi*. *Same donor*, 1910.

10. 12. 13. 3. Skull, with horns, immature. Sistan.

Presented by Capt. C. T. Daukes, 1910.

91. 8. 7. 78–80. Three skulls, with horns, provisionally referred to this species. Kelat, Baluchistan; collected by

Fig. 11.—Head and Neck of Kennion's Gazelle (*Gazella fuscifrons*).
From Lydekker, *Proc. Zool. Soc.* 1911.

Col. Sir O. B. St. John, K.C.B. As *G. seistanica* and *G. fuscifrons* occur in Sistan, they are probably also found in Baluchistan, the latter at lower levels.

Presented by A. O. Hume, Esq., C.B., 1891.

VIII. GAZELLA BENNETTI.

Antilope bennettii, *Sykes*, *Proc. Zool. Soc.* 1831, p. 104; *Owen*, *ibid.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Lesson*, *Hist. Nat. Anim.* vol. x, p. 287, 1836, *Nouv. Tabl. Règne Anim.*, *Mamm.* p. 176, 1842; *Waterhouse*, *Cat. Mamm. Mus. Zool. Soc.* p. 40, 1836; *Gervais*, *Dict. Sci. Nat.*, *Suppl.* vol. i, p. 261, 1840; *Lauril-*

lard, *Dict. Univ. Hist. Nat.* vol. i, p. 617, 1841; *Schinz*, *Synop. Mamm.* vol. ii, p. 400, 1845, *Mon. Antilop.* pl. iii, *b*, 1848; *Reichenbach*, *Säugethiere*, vol. iii, p. 111, 1845; *Fraser*, *Zool. Typica*, l. xvi, 1849; *Horsfield*, *Cat. Mamm. E. India Mus.* p. 166, 1851; *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. v, p. 405, 1855.

Antilope arabica, *Elliot*, *Madras Journal*, vol. x, p. 223, 1837.

Gazella christyi, *Blyth* (ex *Gray*), *Journ. Asiat. Soc. Bengal*, vol. xi, p. 452, 1842; *Hutton*, *ibid.* vol. xv, p. 151, 1846; nec *Lichtenstein*.

Gazella bennettii,* *Gray*, *List Mamm. Brit. Mus.* p. 161, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *List Osteol. Brit. Mus.* p. 56, 1847, *Knowsley Menagerie*, p. 4, 1850; *Hutton*, *Journ. Asiat. Soc. Bengal*, vol. xv, p. 150, 1846; *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853; *Jerdon*, *Mamm. India*, p. 280, 1867; *Blanford*, *Journ. Asiat. Soc. Bengal*, vol. xxxvi, pt. 2, p. 196, 1867, *Zool. Abyssinia*, p. 261, 1871, *Proc. Zool. Soc.* 1873, p. 315, *Eastern Persia*, vol. ii, p. 91, 1876, *Fauna Brit. India*, *Mamm.* p. 526, 1891; *Kinloch*, *Large Game Shooting*, p. 5, 1869; *McMaster*, *Notes on Jerdon*, pp. 141 and 249, 1870; *Stoliczka*, *Journ. Asiat. Soc. Bengal*, vol. xli, pt. 2, p. 229, 1872; *Brooke*, *Proc. Zool. Soc.* 1873, p. 544; *Ball*, *Proc. Asiat. Soc. Bengal*, 1877, p. 172; *Flower and Garson*, *Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 264, 1884; *Sterndale*, *Mamm. India*, p. 463, 1884; *Murray*, *Zool. Sind*, p. 56, 1884; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 159, 1891; *Flower and Lydekker*, *Study of Mammals*, p. 342, 1891; *Jentink*, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 168, 1892; *Ward*, *Records of Big Game*, p. 124, 1892, ed. 6, p. 247, 1910, ed. 7, p. 246, 1914; *Lydekker*, *Horns and Hoofs*, p. 175, 1893, *Great and Small Game of India*, *etc.* p. 185, 1900, *Game Animals of India*, *etc.* p. 201, 1907, *Cat. Hume Bequest Brit. Mus.* p. 30, 1913; *Percy*, *Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 355, 1894; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 119, pl. lx, 1898; *Bentham*, *Cat. Asiat. Horns Ind. Mus.* p. 58, 1908; *Pocock*, *Proc. Zool. Soc.* 1910, p. 887; *Wroughton*, *Journ. Bombay Nat. Hist. Soc.* vol. xxi, pp. 410 and 1194, 1912.

Antilope hazenna, *I. Geoffroy*, *Voyage Jacquemont*, *Mamm.* pl. lxxiv, pl. vi, 1844; *Schinz*, *Mon. Antilop.* pl. xxi, *a*, 1848; *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. v, p. 406, 1855.

Tragops bennettii, *Hodgson*, *Journ. Asiat. Soc. Bengal*, vol. xvi, pp. 11 and 695, 1847; *Gray*, *Proc. Zool. Soc.* 1850, p. 116, *Cat. Ungulata Brit. Mus.* p. 62, 1852, *Cat. Ruminants Brit. Mus.* p. 39, 1872, *Hand-List Ruminants Brit. Mus.* p. 108, 1873; *Adams*, *Proc. Zool. Soc.* 1857, p. 522; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 233, 1862; *Blyth*, *Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 173, 1863.

Gazella hazenna, *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853.

Tragopsis bennettii, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 157, 1869.

Tragopsis hazenna, *Fitzinger*, *loc. cit.* 1869.

Gacella bennetti, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 79, 1907.

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* *G. bennetti* of later writers.

CHINKARA, or INDIAN GAZELLE.

Type of *Tragops* and *Tragopsis*, founded upon the supposed absence of face-glands.

Typical locality Deccan, India.

Nearly allied to last, but smaller. Shoulder-height about 25 to 26 inches; ears shorter; whole forehead deep rufous fawn, as is also the whole of middle line of face, including extremity of muzzle; nose-spot ill-defined and blackish brown; horns without any noticeable inturning of tips, those of female apparently smaller than in *fuscifrons*.

Horns nearly straight, diverging slightly from bases, with a slight S-like curvature in profile, and the tips usually bending slightly forwards, without any perceptible inturning, 15 or 16 ridges, occasionally more; general colour dull fawn (light chestnut), with the dark face-stripes and muzzle deep rufous fawn, and an ill-defined blackish brown nose-spot; ears medium, fawn on backs; flank and pygal bands brownish fawn scarcely darker than back. Basal length of skull about $7\frac{1}{4}$ inches, maximum width $3\frac{1}{2}$, length from muzzle to orbit 4 inches. Good horns measure from 12 to $15\frac{5}{8}$ inches in length, with a basal girth of from $3\frac{1}{2}$ to $4\frac{3}{4}$, and a tip-to-tip interval of from $4\frac{1}{4}$ to $8\frac{5}{8}$ inches.

The range is restricted to peninsular India and perhaps Sind; the lowland gazelle of Eastern Persia identified by Blanford with this species being *fuscifrons*.

42. 8. 6. 9. Skull, with horns, and skin. Deccan. Co-type. *Presented by Col. W. H. Sykes*, 1842.

42. 8. 6. 10. Skin, mounted, female. Same locality. Co-type. *Same history.*

617, *a*. Pair of horns. India. Type of *G. christii*. *Presented by Dr. J. Christie, about* 1842.

55. 1. 20. 13. Frontlet and horns. Nepal. *Presented by H.H. Maharaja Dhuleep Singh*, 1855.

56. 5. 6. 69–70. Two skulls, with horns. Salt Range, Punjab; collected by W. Theobald, Esq. *Presented by Dr. T. Oldham*, 1856.

56. 5. 6. 71–72. Two skulls, female. Same locality and collector. *Same history.*

85. 6. 13. 3. Skull, with horns, and skin. Sind. *Presented by the Karachi Museum*, 1885.

88. 3. 20. 20. Skull, with horns. Meerut district.
Presented by R. Lydekker, Esq., 1888.

89. 11. 20. 13–14. Two frontlets and horns. Simrol, Bengal. *Presented by Col. J. Evans*, 1889.

91. 8. 24. 2. Skull, female. Gwalior.
Presented by C. Maries, Esq., 1891.

FIG. 12.—HEAD OF INDIAN GAZELLE (*Gazella bennetti*).

91. 8. 7. 72. Skull, with horns. Jodpur.
Presented by A. O. Hume, Esq., C.B., 1891.

91. 8. 7. 73. Skull, with horns. Gurgaon, Punjab.
Same history.

91. 8. 7. 74–75. Two skulls, with horns. Etawah, N.W.P. *Same history.*

91. 8. 7. 76–77. Two skulls, with horns. Sirsa, Punjab.
Same history.

12. 10. 31. 23. Skull, with horns. Gurgaon. No. 20 in Ward's 1910 list. Length of horns $12\frac{3}{4}$, girth $4\frac{1}{4}$, tip-to-tip 5 inches. *Bequeathed by A. O. Hume, Esq., C.B.*, 1912.

12. 10. 31. 24. Skull, with horns. Delhi. *Same history.*

12. 10. 31. 25. Skull, with horns. Gurgaon; collected by Mr. W. Chill. *Same history.*

12. 10. 31. 72. Skull, with horns. Locality unknown. *Same history.*

8. 16. 15. 1. Head, mounted (fig. 12). Hissar district, Punjab. *Presented by H. J. Vaughan, Esq.*, 1908.

IX. GAZELLA CUVIERI.

Antilope cuvieri, *Ogilby, Proc. Zool. Soc.* 1840, p. 34; *Schinz, Synop. Mamm.* vol. ii, p. 399, 1845, *Mon. Antilop.* pl. ii, *a*, 1848; *Fraser, Zool. Typ.* pl. xvii, 1849.

Gazella dorcas, var. 3, *Gray, Cat. Ungulata Brit. Mus.* p. 57, 1852.

Gazella cineraceus, *Temminck, Esquiss. Zool. Guiné*, p. 193, 1853, from the "Kevel Gris" of F. Cuvier, *Hist. Nat. Mamm.* vol. iii, livr. lvii, 1827.

Gazella corinna, *Loche, Cat. Mamm. Algérie*, p. 13, 1850, *Expli. Algér. Mamm.* p. 68, 1867; nec *Pallas.*

Gazella kevella, *Tristram, The Great Sahara*, p. 387, 1860; *Lataste, Actes Soc. Linn. Bordeaux*, vol. xxxix, p. 296, 1885; *Buxton, Proc. Zool. Soc.* 1890, p. 633; nec *Pallas.*

Gazella cuvieri, *Gray, Hand-List Ruminants Brit. Mus.* p. 107, 1873; *Brooke, Proc. Zool. Soc.* 1873, p. 542; *Ward, Records of Big Game*, p. 126, 1892, ed. 6, p. 248, 1910, ed. 7, p. 248, 1914; *Lydekker, Horns and Hoofs*, p. 233, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 251, 1908; *Thomas, Proc. Zool. Soc.* 1894, p. 464, 1904, vol. ii, p. 347; *Pease, ibid.* 1896, p. 814; *Whitaker, ibid.* 1896, p. 815; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 109, pl. lviii, 1898; *Pocock, Proc. Zool. Soc.* 1910, p. 887; *Hartert, Novit. Zool.* vol. xx, p. 33, 1913.

EDMI.

Typical locality Mogador.

Nearly related to *fuscifrons* and *bennetti*, of which it may be regarded as the African representative, but larger than the latter, with the coat rougher than in either (in accordance with its mountain habitat), the nose-spot larger, more defined, and black, the lateral face-stripes, flank-band, and pygal band darker, and the tail more thickly haired.

Size rather larger than in *bennetti*, shoulder-height about

26 to 27 inches. Horns relatively short, thick, strongly ridged, but little divergent, with a very slight backward curvature, and a small upward and forward bend at the tips; coat rather long, rough, and coarse; general colour dull fawn; median face-stripe brownish fawn, with a large black nose-patch, in front of which the muzzle is whitish; ears long and pointed, with the backs fawn; flank and pygal bands distinct and darker than back. Basal length of skull about $7\frac{5}{8}$ inches, maximum breadth $3\frac{5}{8}$, length from muzzle to orbit $4\frac{3}{8}$ inches. Fine horns measure from $11\frac{1}{2}$ to $14\frac{7}{8}$ inches in length, with a basal girth of from $3\frac{1}{4}$ to 5, and a tip-to tip interval of from $3\frac{5}{8}$ to 8 inches.

The distributional area includes the mountainous districts of Morocco, Algeria, and Tunisia.

53. 8. 29. 97. Skull, with horns, and skin, immature female. Mogador; presented, when alive, by W. Willshire, Esq. in 1839 to the Zoological Society, in whose menagerie it died in May of the following year. Type.

Purchased (*Zoological Society*), 1853.

55. 12. 29. 400. Skin, mounted. N. Africa; from an animal presented to the Zoological Society by H.M. Queen Victoria. *Purchased* (*Zoological Society*), 1855.

66. 12. 30. 24. Skeleton. North Africa.

Purchased (*Zoological Society*), 1866.

94. 4. 18. 1–3. Three frontlets, with horns. Near Biskra, Algerian Sahara.

Presented by J. Rowland Ward, Esq., 1894.

94. 8. 1. 1. Skin, mounted. Near Biskra.

Presented by J. I. S. Whitaker, Esq., 1894.

8. 4. 11. 1. Skin, mounted, and skull. Mettili Range, Barilla, Algeria. *Presented by E. Richardson Cox, Esq.*, 1908.

8. 4. 11. 2. Skin, female. Same locality. *Same history.*

X. GAZELLA GAZELLA.

Antilope gazella, *Pallas*, *Misc. Zool.* p. 7, 1766, ex "La Gazelle," *Buffon*, *Hist. Nat.* vol. xii, p. 249, pl. xxiii, 1764; *Boddaert*, *Elenchus Anim.* p. 140, 1785; *Kerr*, *Linn.'s Anim. Kingdom*, p. 316, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 638, 1792; *Latham and Davies*, *Faunula Indica*, p. 4, 1795; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 642, 1800; *Shaw*, *Gen.*

Zool. vol. ii, pt. 2, p. 316, 1801; *Turton, Linn.'s Syst. Nat.* vol. i, p. 114, 1802: teste *O. Neumann.*

Gazella merrilli, *Thomas, Proc. Zool. Soc.* 1904, vol. ii, p. 347, *Abs.* p. 19; *Carruthers, Field*, vol. cxiv. p, 1135, 1909.

Gazella gazella, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 245.

Typical locality Syria.

The Palestine representative of *cuvieri*, from which this

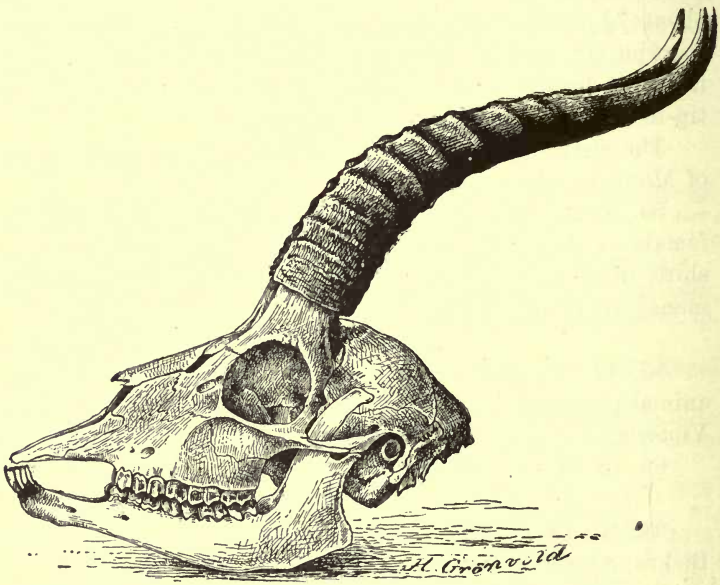

FIG. 13.—SKULL AND HORNS OF PALÆSTINE GAZELLE (*Gazella gazella*). From Thomas, *Proc. Zool. Soc.* 1904.

species is distinguished by its somewhat inferior size and smaller and rather differently curved horns. Coat, general colour, and colour-pattern as in *cuvieri;* horns relatively short, thick basally, and distinctly S-shaped, curving backwards below the tips, and forwards at the tips themselves, with about 10 or 12 not very strongly pronounced ridges (against from 20 to 24 bolder ones on the comparatively straight horns of *cuvieri*). Skull smaller than in that species, with the premaxillæ stopping short of the nasals, instead of forming a broad articulation with them; basal length $5\frac{3}{4}$ inches (170 mm.), maximum width $3\frac{1}{2}$ (88 mm.),

length from muzzle to orbit $3\frac{13}{16}$ inches (99 mm.). Length of horns $9\frac{1}{2}$ inches (241 mm.), girth $4\frac{5}{16}$ inches (108 mm.).

From *arabica*, to which there is a certain resemblance in the set and curvature of the horns, this species is distinguished by its larger size; being in fact intermediate in this respect between *cuvieri* and *arabica*. Sclater and Thomas, who identified it with *G. dorcas*, regarded *Antilope gazella*, Pallas (1766), as a synonym of *Capra gazella*, Linn. (= *Oryx gazella*), but this view is rejected by O. Neumann; see *Oryx gazella*, infra, p. 119.

4. 12. 18. 1. Skull, with horns (fig. 13), and skin. Hizmeh, a little north of Jerusalem, December, 1903. Type of *G. merrilli*. *Presented by Dr. Selah Merrill*, 1904.

4. 12. 18. 2. Skull, with horns, and skin. Same locality and date. *Same history.*

10. 3. 12. 16. Skull, with horns. Near Jerusalem; collected by Douglas Carruthers, Esq. *Purchased*, 1910.

10. 3. 12. 17. Skull, with horns, immature. Same locality. *Same history.*

11. 8. 3. 1. Skull, with horns. Syria. *Presented by Mrs. Guy Bethell*, 1911.

XI. GAZELLA ARABICA.

Antilope arabica, *Lichtenstein, Darstellung. Säugethiere*, pl. vi, 1827; *Ehrenberg, Ehrenberg and Hemprich, Symbol. Phys.* pt. 1, pl. v, 1828; *Fischer, Synop. Mamm.* p. 460, 1829; *Lesson, Hist. Nat. Anim.* vol. x, p. 287, 1836, *Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 40, 1838; *Oken, Allgemeine Naturgesch.* vol. vii, p. 1371, 1838; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 261, 1840; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 407, 1844, vol. v, p. 403, 1855; *Reichenbach. Säugethiere*, vol. iii, pl. xxxiii, fig. 188, 1845; *Schinz, Synop. Mamm.* vol. ii, p. 399, 1845, *Mon. Antilop.* p. 4, pl. ii, 1848; *Giebel, Säugethiere*, p. 307, 1853–55; *Heuglin, Petermann's Mittheil.* vol. vii, p. 16, 1861, *Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 5, 1863.

Antilope cora, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 216, vol. v, p. 333, 1827; *Lesson, Hist. Nat. Anim.* vol. x, p. 287, 1836.

Gazella cora, *Gray, List Mamm. Brit. Mus.* p. 161, 1843.

Antilope dorcas, *var.*, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 268, 1847.

Gazella vera, *Gray, Knowsley Menagerie*, pl. iii, 1850 (vide *Sclater, Proc. Zool. Soc.* 1896, p. 984).

Gazella arabica, *Temminck, Esquiss. Zool. Guiné*, p. 193, 1853; *Tristram, Proc. Zool. Soc.* 1866, p. 86, *Fauna and Flora of Palestine*, p. 26, 1884,; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 159, 1869; *Blanford, Zool. Abyssinia*, p. 261, 1870; *Brooke, Proc. Zool. Soc.* 1873, p. 544, 1874, p. 541; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 137, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 168, 1892; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 458, 1891; *Ward, Records of Big Game*, p. 114, 1892, ed. 6, p. 251, 1910, ed. 7, p. 249, 1907; *Lydekker, Horns and Hoofs*, p. 179, 1893, *Great and Small Game of Europe, etc.* p. 202, 1901; *Sclater, Proc. Zool. Soc.* 1897, p. 812; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 115, pl. lix, 1898; *Anderson and de Winton, Zoology of Egypt, Mamm.* p. 342, 1902; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 244; *Pocock, Proc. Zool. Soc.* 1910, p. 887.

Ghasal (Arabic); Ariel, or Aiel (Syriac).

Typical locality Farsan Island, on Arabian coast of Red Sea.

Type in Berlin Museum.

Differs from *cuvieri* by its rather smaller size, smoother and darker coat, and smoky brown pygal and flank bands.

Size medium, shoulder-height 24 or 25 inches. Horns rather short and thick, nearly parallel, with a slight backward curve, and a forward inclination at the tips; general colour dark smoky fawn, darker than in any of the allied species; median face-stripe dark rufous fawn, with a black nose-spot; ears medium, brownish fawn on backs; flank- and pygal bands dark smoky brown; limbs more rufous than body. Basal length of skull about $6\frac{3}{4}$ inches, maximum breadth $3\frac{1}{4}$, length from muzzle to orbit $3\frac{5}{8}$ inches. Good horns measure from $8\frac{1}{2}$ to $10\frac{1}{2}$ inches in length, with a basal girth of from 4 to $4\frac{1}{2}$, and a tip-to-tip interval of from 4 to $4\frac{1}{8}$ inches.

The range is restricted to western Arabia.

The species has been divided into three local races, distinguished as follows:—

A. Flank-band present.
  a. General colour dark smoky fawn ..... *G. a. erlangeri.*
  b. General colour pale sandy fawn like that of *dorcas* ..... *G. a. rueppelli.*
B. Flank-band wanting ..... *G. a. arabica.*

Whether these characters are constant, the specimens in the Museum are insufficient to determine.

A.—Gazella arabica arabica.

Gazella arabica typica, *Ward, Records of Big Game*, ed. 6, p. 251, 1910.

Typical locality Farsan Island, Red Sea.

General colour lighter than in the next race, with the dark flank-band obsolete.

No specimen in collection.

B.—Gazella arabica erlangeri.

Gazella bennetti, *Yerbury and Thomas, Proc. Zool. Soc.* 1895, p. 555, nec *Sykes.*

Gazella arabica erlangeri, *O. Neumann. Sitzber. Ges. nat. Freunde*, 1906, p. 244; *Ward, Records of Big Game*, ed. 6, p. 251, 1910.

Typical locality Lahejh, north of Aden, Arabia.

Type in the collection of Dr. O. Neumann.

General colour dark smoky fawn, with a strongly pronounced blackish flank-band.

69. 10. 24. 100. Skull, with horns. Mocha, south-western Arabia. *Presented by Dr. W. T. Blanford*, 1869.

96. 12. 4. 1–2. Two skulls, with horns, imperfect, and skins. Aden. *Presented by E. N. Buxton, Esq.*, 1896.

97. 1. 5. 15. Skin, mounted. Near Aden; from the collection of Sir Victor Brooke, Bart.

Presented by Sir Douglas Brooke, Bart., 1897.

97. 11. 20. 4. Skin, mounted. Near Aden.

Purchased (Zoological Society), 1897.

C.—Gazella arabica rueppelli.

Gazella arabica rueppelli, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 244; *Ward, Records of Big Game*, ed. 6, p. 151, 1910.

Typical locality Syria.

Type in collection of Dr. O. Neumann. Described as being much paler than either of the other races, and resembling *G. dorcas* in general colour, with the chestnut face and dark nose-spot of *G. a. erlangeri.*

64. 8. 17. 16. Skin, immature. Mountains of Palestine.

Presented by Rev. Canon H. B. Tristram, 1864.

XII. GAZELLA MUSCATENSIS.

Gazella muscatensis, *Brooke*, *Proc. Zool. Soc.* 1874, p. 141, pl. xxii; *Lydekker*, *Horns and Hoofs*, p. 179, 1893, *Great and Small Game of Europe, etc.* p. 204, 1901; *Thomas*, *Proc. Zool. Soc.* 1894, p. 451, 1903, vol. ii, p. 317; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 155, pl. lxv, 1898.

Typical locality Muscat, Oman, eastern Arabia.

Nearly allied to *G. arabica*, but smaller—the shoulder-height being only about 21 to 22 inches—and with the tips of the relatively short horns markedly inturned. General colour dark rufous fawn, closely approximating to the smoky fawn of the Aden race of *arabica*; dark flank-band blackish, light one obsolete; median face-stripe deep rufous with a blackish nose-patch, light lateral stripes narrow and well defined, but the dark external ones not defined from fawn of cheeks; limbs white only on inner surfaces of upper segment of front pair and thighs, with brownish knee-tufts. Basal length of adult female skull $5\frac{3}{4}$, maximum breadth $2\frac{7}{8}$, length from muzzle to orbit $2\frac{5}{8}$ inches.

75. 10. 7. 1. Skull, imperfect, bones of trunk, and skin. Muscat, Oman; collected by Lieut.-Col. Sir C. B. Euan Smith, K.C.B. Type. *Purchased* (*Zoological Society*), 1875.

94. 3. 9. 5. Skin, mounted. Khode, east of Oman. *Presented by Lieut.-Col. A. S. G. Jayakar*, 1894.

94. 3. 9. 6. Skin, mounted, female. Sharkeyeh, east of Oman. *Same history.*

94. 3. 9. 7. Skull, with horns, and skin. Khode. *Same history.*

94. 3. 9. 8–9. Two skulls, with horns, and skins, female. Khode. *Same history.*

XIII. GAZELLA MARICA.

Gazella marica, *Thomas*, *Ann. Mag. Nat. Hist.* ser. 6, vol. xix, p. 162, 1897; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 95, pl. lvi, 1898; *Lydekker*, *Great and Small Game of Europe, etc.* p. 201, 1901; *Pocock*, *Proc. Zool. Soc.* 1910, p. 88.

Rhim (in common with several other gazelles).

Typical locality Nejd, central Arabia.

A pale-coloured desert form, of the approximate size of *muscatensis*, but with longer and more regularly incurving

horns and a white forehead. General colour pale fawn; fawn face-streaks nearly obsolete, when distinguishable, not darker than general body-colour and but slightly defined from intervening white streaks; ears long, whitish fawn on the backs; pale flank-band practically obsolete, and the dark one, as well as that on front border of rump-patch, pale brown and scarcely deeper in tint than the general colour, into which it merges; limbs mainly whitish, the fawn being restricted to the front surface of the fore-legs as far as the knees, and to the outer side of the hind-legs to some distance below the hocks. Basal length of skull $6\frac{1}{8}$, maximum width $3\frac{3}{16}$, length from muzzle to orbit $3\frac{1}{2}$ inches.

In the *Book of Antelopes* (although not in the original description) this species is stated, apparently on account of the slight development of the face-markings, to be related to *G. subgutturosa*, to which, however, it seems to have no real affinity, the females having horns and the males apparently lacking a goitre. The range includes the desert tract from Nejd to western Oman.

97. 1. 14. 5. Skull, with horns, and skin. Desert near Nejd. Type. *Presented by Lieut.-Col. A. S. G. Jayakar*, 1897.

97. 1. 14. 6. Skeleton and skin. Same locality. *Same history.*

97. 1. 14. 7–8. Two skeletons and skins, immature. Same locality. *Same history.*

97. 1. 14. 9. Skeleton and skin, female. Abrec Dahireh, Oman. *Same history.*

98. 5. 4. 1. Skull, with horns. Habur, near Adam, Oman. *Same donor*, 1898.

XIV. GAZELLA RUFIFRONS.

Le Kevel, *F. Cuvier*, *Hist. Nat. Mamm.* vol. i, livr. 1, pl. 109, 1818.

Corinne, *F. Cuvier*, *op. cit.* vol. ii, livr. 36, pl. 229, 1822, and Corinne jeune, vol. iv, livr. 72, pl. 426, 1842.

Antilope kevella, *Owen*, *Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868 (teste *Pocock*, *Proc. Zoo. Soc.* 1910, p. 887), nec *Pallas*.

Gazella rufifrons, *Gray*, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, pp. 214 and 231, 1846, *Knowsley Menagerie*, p. 4, pl. v, 1850, *Proc. Zool. Soc.* 1850, p. 115, *Cat. Ungulata Brit. Mus.* p. 60, 1852, *Cat. Ruminants Brit. Mus.* p. 39, 1872, *Hand-List Ruminants Brit. Mus.* p. 108, 1873; *Brooke*, *Proc. Zool. Soc.*

1873, p. 540; *Sclater, List Anim. Zool. Gardens*, p. 140, 1883; *Lydekker, Horns and Hoofs*, p. 232, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 256, 1908, *Suppl.* p. 13, 1911; *Ward, Records of Big Game*, ed. 2, p. 159, 1896, ed. 6, p. 262, 1910, ed. 7, p. 260, 1907; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 163, pl. lxvii, 1898; *Thomas, Proc. Zool. Soc.* 1903, vol. i, p. 301; *Alexander, From Niger to Nile*, vol. ii, p. 393, 1907; *Pocock, Proc. Zool. Soc.* 1910, p. 887, 1912, p. 5.

Gazella (Eudorcas) lævipes senegalensis, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 159, 1869.

Gazella (Korin) rufifrons, *Gray, Cat. Ruminants Brit. Mus.* p. 39, 1872.

Type of *Eudorcas* and *Korin*.

Typical locality Senegambia.

Size medium, build relatively stout. Horns comparatively short, heavily ringed, evenly divergent, slightly curved backwards, and turning forwards at the tips; general colour deep sandy rufous, brightening into rich rufous on the lateral and broad median face-stripes; no dark nose-spot; light face-stripes buff; a broad sandy buff light flank-band, below which is a narrow black one; pygal band nearly obsolete; root of tail sandy. Skull with rather short and (especially posteriorly) broad nasals, and narrow nasal aperture; basal length 7 inches, maximum breadth 3, length from orbit to muzzle 4 inches. Length of good horns 11 to $13\frac{7}{8}$ inches, basal girth $4\frac{1}{2}$ to $5\frac{1}{4}$, tip-to-tip interval $3\frac{3}{4}$ to $7\frac{1}{2}$ inches.

The alleged absence of knee-tufts is denied by Pocock;* their presence in *G. r. lævipes* being mentioned by Lönnberg, as cited under the heading of that race.

The range extends from Senegambia and Nigeria to Kordofan and other parts of the Eastern Sudan.

The named races are distinguishable as follows:—

A. General colour rufous fawn.
  a. Colour darker; more buff on face ..... *G. r. rufifrons*.
  b. Colour paler; less buff on face ..... *G. r. lævipes*.

B. General colour ochery fawn.
  a. General colour pure ochery ..... *G. r. hasleri*.
  b. General colour browner.
    a'. Colour lighter ..... *G. r. kanuri*.
    b'. Colour deeper ..... *G. r. centralis*.

* *Proc. Zool. Soc.* 1912, p. 6.

A.—Gazella rufifrons rufifrons.

Gazella rufifrons typica, *Ward, Records of Big Game*, ed. 6, p. 262, 1910, ed. 7, p. 261, 1914.

Typical locality Senegambia.

Median face-stripe and forehead bright rufous; lateral face-stripes buff from eye to nostril; cheeks from face-gland to lip pale buffish rufous; crown and neck rufous buff.

44. 1. 18. 24. Skull, with horns, and skin, immature. Senegambia. This specimen (Nos. 411, *b*, and 411, *c*, of Gray's Catalogues) and Nos. 413, *c*, 46. 1. 10. 4, and 46. 11. 20. 8, are co-types of the species.

Presented by the Earl of Derby, 1844.

413, *c*. Skull, with horns, and skin, female. Senegambia.

Presented by the Earl of Derby.

45. 10. 4. 1 (413, *d*). Skull, with horns, immature female. Senegambia. *Same donor*, 1845.

46. 1. 10. 4 (411, *d*). Skull, with horns, and skin. Senegambia. *Same donor*, 1846.

46. 11. 20. 8 (411, *a*). Skull, with horns, and skin, immature female. Senegambia. *Same history.*

66. 4. 25. 6. Skeleton, female. Senegambia.

Purchased (Zoological Society), 1866.

4. 7. 9. 4. Skull, with horns. Bida, Northern Nigeria.

Presented by Capt. H. Cock, 1904.

4. 7. 9. 5. Skull, with horns, and skin, female. Same locality. *Same history.*

4. 7. 9. 6. Skull, with horns. Kalani, west of Sokoto.

Same history.

4. 7. 9. 7. Skull, with horns. Fakai, Northern Nigeria.

Same history.

4. 7. 9. 8. Skull, with horns, female. Argungu, Northern Nigeria. *Same history.*

5. 5. 10. 4. Skull, with horns, and skin. Wasé, Nigeria.

Presented by Dr. H. K. W. Kumm, 1905.

9. 11. 2. 31. Skull, with horns, and skin. Longol, Senegambia; collected by Mr. W. T. Riggenback. *Purchased*, 1909.

9. 11. 2. 32. Skin. Ogo, Longol. *Same history.*

9. 11. 2. 33. Skin, female. Gassané, Longol.

Same history.

B.—Gazella rufifrons lævipes.

Antilope lævipes, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 266, 1847, form *a*; *Wagner, Schreber's Säugthiere, Suppl.* vol. v, p. 404, 1855; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 6, 1863, *Reise Nordost-Afrika*, vol. ii, p. 100, 1877.

Antilope leptoceros, *Heuglin, Nova Acta, op. cit.* p. 7, 1863; nec *Geoffroy.*

Gazella salmi, *Lorenz, Sitzber. k. Ak. Wiss. Wien*, 1906, p. 28.

Gazella rufifrons salmi, *Lydekker, Game Animals of Africa*, p. 257, 1908; *Ward, Records of Big Game*, ed. 6, p. 263, 1910.

Gazella rufifrons lævipes, *Lönnberg, Novit. Zool.* vol. xxi, p. 155, 1914; *Ward's Records of Big Game*, ed. 7, p. 261, 1914.

Typical locality Eastern Sudan.

Closely allied to typical race, but apparently paler in colour, with a smaller amount of buff on face, a broader dark flank-band, and longer horns, more incurved at tips.

General colour pale yellowish brown; longer hairs on forehead, crown, nose, back of neck, and a patch on cheeks rufous; area round eye and an ill-defined streak extending thence towards nose whitish; upper lip isabelle-fawn on sides, whitish in front; lower lip, chin, and throat also whitish; backs of ears pale fawn, becoming whitish at base laterally, inner sides, margins, and tips with long white hairs. Horns in profile recalling those of *G. thomsoni* (*infra*), in front view more or less lyrate, with the tips inclined strongly inwards and slightly forwards.

The range includes Kordofan, El Obeid, and other parts of the Eastern Sudan, extending to the Blue Nile and Dinder Valleys.

Sclater and Thomas tentatively identified the eastern form of Sundevall's *G. lævipes* with *G. rufina*, but it has been definitely proved by Lönnberg to be the same as the so-called *G. salmi.*

99. 7. 1. 2. Skull, with horns, and skin. Faki Kowi, on the White Nile, 200 miles south of Khartum.

Presented by F. Burges, Esq., 1899.

99. 7. 1. 3. Skull, with horns, immature. Same locality.

Same history.

0. 8. 6. 9. Skull, with horns, and skin. White Nile.

Presented by Capt. S. S. Flower, 1900.

0. 8. 6. 10. Skull, with horns, and skin, female. White Nile. *Same history.*

0. 8. 6. 11. Skin, immature. Same locality. *Same history.*

1. 8. 8. 43. Skull, with horns, imperfect, and skin, female. Kaka, White Nile. *Presented by R. Mc. D. Hawker, Esq.*, 1901.

3. 2. 8. 33. Skull, with horns, and skin. Agageh, Sudan. *Presented by Major H. N. Dunn*, 1903.

3. 2. 8. 34. Skull, with horns, and skin, female. Same locality. *Same history.*

7. 2. 23. 2. Skull, with horns. White Nile. *Presented by J. Rowland Ward, Esq.*, 1907.

9. 9. 14. 1. Head. mounted. White Nile. *Presented by Norman B. Smith, Esq.*, 1909.

C.—Gazella rufifrons hasleri.

Gazella rufifrons hasleri, *Pocock*, *Proc. Zool. Soc.* 1912, p. 5, *Abs. P. Z. S.* 1912, p. 47.

Typical locality Kano, Northern Nigeria.

Distinguished by the ochery fawn general colour, with a paler zone above dark flank-band; tail coloured like back for its basal inch, elsewhere black above; dark band bordering white area on buttocks faint; forehead darker and deeper in colour than cheeks and neck, with a few white hairs between horns. The white nose of the type specimen is almost certainly either an individual peculiarity or a feature induced by captivity.

12. 12. 22. 1. Skull, with horns, and skin. Kano, Northern Nigeria. Type. *Presented by the Zoological Society*, 1912.

D.—Gazella rufifrons kanuri.

Gazella rufifrons kanuri, *Schwarz*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 40, 1914.

Typical locality Lower Shari Valley, Lake Chad district. Type in the Senckenberg Museum, Frankfort-am-Main.

Allied to *hasleri*, but the general colour tending to pale

brownish rather than ochery, and the horns very slightly divergent, spreading only at tips. General colour cinnamon, darkening on forehead; flanks slightly darker and duller; thighs paler than ordinary buff; light facial stripes rather broad; flank-band brownish black; skull narrow across orbits (postorbital width $3\frac{7}{16}$ inches = 86 mm.), with long rostrum and narrow palate; basal length $7\frac{1}{4}$ inches (180 mm.).

7. 7. 8. 210–211. Two skulls, one immature, with horns, and skins. Yo, Lake Chad district; collected during the Alexander-Gosling Expedition.

Presented by the Alexander-Gosling Expedition, 1907.

7. 7. 8. 212. Skull, with horns, and skin, female. Same locality and collection. The reference of both this and the preceding specimens to the present race is provisional.

Same history.

E.—Gazella rufifrons centralis.

Gazella rufifrons centralis, *Schwarz*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 40, 1914.

Typical locality Magretta, near Melfi, Bagirmi.

Type in Senckenberg Museum, Frankfort-am-Main.

General colour darker cinnamon than in *kanuri*, not deeper on forehead, but becoming paler on flanks and thighs; flank-stripe black; horns of medium length, diverging nearly from bases and spreading at tips. Skull with prominent orbits (postorbital width $3\frac{7}{8}$ inches = 97·3 mm.), short, narrow rostrum, and rather broad palate; basal length $7\frac{5}{16}$ inches (185 mm.).

No specimen in collection.

XV. GAZELLA RUFINA.

Gazella rufina, *Thomas*, *Proc. Zool. Soc.* 1894, p. 467; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 167, 1898; *Lydekker*, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 259, 1908; *Hartert*, *Novit. Zool.* vol. xx, p. 35, 1913; *Lönnberg*, *Novit. Zool.* vol. xxi, p. 157, 1914.

Typical locality not definitely known, but probably the interior of Algeria.

Apparently a larger form closely related to the typical race of *rufifrons*, with a richer rufous colouring, and the knee-tufts dull rufous. Skull larger and heavier than in *rufifrons*, with the lachrymal pits larger and deeper, the nasal aperture relatively shorter and broader, and the upper

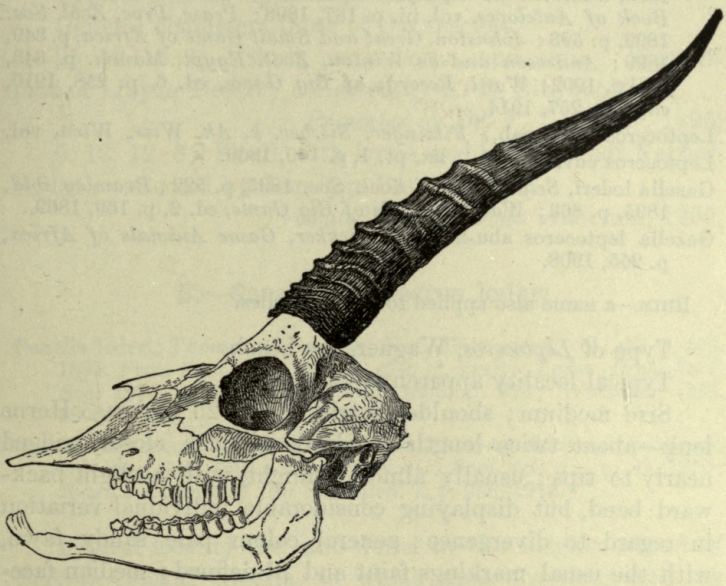

Fig. 14.—Skull and Horns of Red Gazelle (*Gazella rufina*).
From Thomas, *Proc. Zool. Soc.* 1894.

line of the premaxillæ more curved; basal length about $8\frac{1}{16}$, maximum width $3\frac{3}{4}$, length from muzzle to orbit $4\frac{7}{8}$ inches; length of horns in type $11\frac{5}{8}$ inches.

94. 6. 4. 1. Skull, with horns (fig. 14), and skin. Purchased by donor in Algiers. Type.

Presented by Sir E. G. Loder, Bart., 1894.

XVI. GAZELLA LEPTOCEROS.

Antilope leptoceros, *F. Cuvier, Hist. Nat. Mamm.* vol. iv, livr. lxxii, pls. 424 and 425, 1842; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 422, 1844, vol. v, p. 407, 1855; *Schinz, Synop. Mamm.* vol. ii, p. 445, 1845, *Mon. Antilop.* p. 34, pl. xxxviii, 1848; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 269, 1847; *Giebel, Säugethiere*, p. 309, 1853–55; *Heuglin, Reise Nordost-Afrika*, vol. ii, p. 100, 1877.

Antilope (Leptoceros) leptoceros, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 422, 1844.

Gazella dorcas, *var.* 4, *Gray*, *Cat. Ungulata Brit. Mus.* p. 57, 1852.

Gazella leptoceros, *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853; *Brooke*, *Proc. Zool. Soc.* 1873, p. 543; *Lydekker*, *Horns and Hoofs*, p. 234, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 254, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 137, 1898; *Pease*, *Proc. Zool. Soc.* 1899, p. 593; *Johnston*, *Great and Small Game of Africa*, p. 349, 1899; *Anderson and de Winton*, *Zool. Egypt*, *Mamm.* p. 343, pl. lxi, 1902; *Ward*, *Records of Big Game*, ed. 6, p. 258, 1910, ed. 7, p. 257, 1914.

Leptoceros abu-harab, } *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol.
Leptoceros cuvieri, } lix, pt. 1, p. 160, 1869.

Gazella loderi, *Sclater*, *Proc. Zool. Soc.* 1895, p. 522; *Bramley*, *ibid.* 1895, p. 863; *Ward*, *Records of Big Game*, ed. 2, p. 169, 1869.

Gazella leptoceros abu-harah, *Lydekker*, *Game Animals of Africa*, p. 255, 1908.

Rhim—a name also applied to other gazelles.

Type of *Leptoceros*, Wagner, *nec* Leach.

Typical locality apparently Sennar.

Size medium; shoulder-height about 25 inches. Horns long—about twice length of skull—slender, closely ridged nearly to tips; usually almost straight, with a slight backward bend, but displaying considerable individual variation in regard to divergence; general colour pale sandy fawn, with the usual markings faint and ill-defined; median face-stripe and dark lateral stripes sandy and contrasting but slightly with the white ones; flank and pygal bands pale sandy with a brownish wash, only a little darker than back; ears long, narrow, and pointed, with the backs whitish buff; tail sandy at root, darkening to brownish black towards tip; fronts of fore-limbs sandy, of hind-limbs whitish; knee-tufts but little darker than general colour. Skull with premaxillæ articulating broadly with nasals; basal length about $6\frac{1}{2}$ inches, maximum breadth $3\frac{1}{4}$, length from muzzle to orbit $3\frac{5}{8}$ inches. Good horns measure from 13 to $15\frac{7}{8}$ inches in length, with a basal girth of from $3\frac{1}{2}$ to $4\frac{1}{4}$, and a tip-to-tip interval ranging from $3\frac{1}{2}$ to $10\frac{1}{4}$ inches.

The distributional area includes the sandy tracts of the interior of Algeria, Tunisia, and the Eastern Sudan as far south as Nubia and Sennar.

A.—Gazella leptoceros leptoceros.

Gazella leptoceros typica, *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 149, 1898.

Typical locality apparently Sennar.

General characters those of the species.

95. 10. 15. 1. Skull, with horns, and skin. Western part of Libyan Desert; collected by A. R. Birdwood, Esq.
Presented by Dr. P. L. Sclater, 1895.

5. 12. 12. 3. Skull, with horns, and skin, Wadi-Natrun, Egypt; collected by Jennings Bramley, Esq.
Presented by Mrs. John Anderson, 1905.

B.—Gazella leptoceros loderi.

Gazella loderi, *Thomas, Ann. Mag. Nat. Hist.* ser. 6, vol. xiii, p. 452, 1894, *Proc. Zool. Soc.* 1894, p. 470, pl. xxxii; *Loder, Proc. Zool. Soc.* 1894, p. 473; *Pease, ibid.* 1896, p. 813; *Whitaker, ibid.* 1896, p. 816.

Gazella leptoceros loderi, *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 148, 1894; *Hartert, Novit. Zool.* vol. xx, p. 33, 1913; *Ward's Records of Big Game*, ed. 7, p. 258, 1914.

Typical locality the sand-dunes in the neighbourhood of Biskra, Central Algeria, to which area, together with the adjacent part of Tunisia, this race is restricted.

Separated by Sclater and Thomas as a distinct race, but points of difference from typical race not known.

94. 6. 4. 2. Skull, with horns (fig. 15), and skin. Ten miles south of Biskra. Type.
Presented by Sir E. G. Loder, Bart., 1894.

94. 6. 4. 3. Frontlet and horns. Purchased at Biskra.
Same history.

94. 6. 4. 4. Skull, with horns. South of Biskra.
Same history.

94. 4. 18. 4. Frontlet and horns. Purchased at Biskra.
Presented by J. Rowland Ward, Esq., 1894.

95. 8. 20. 1. Skin, mounted, and skull. South of Choff-Jerid, Tunisia. *Presented by J. I. S. Whitaker, Esq.*, 1895.

95. 8. 20. 2. Skull, with horns, and skin, female. Same locality. *Same history.*

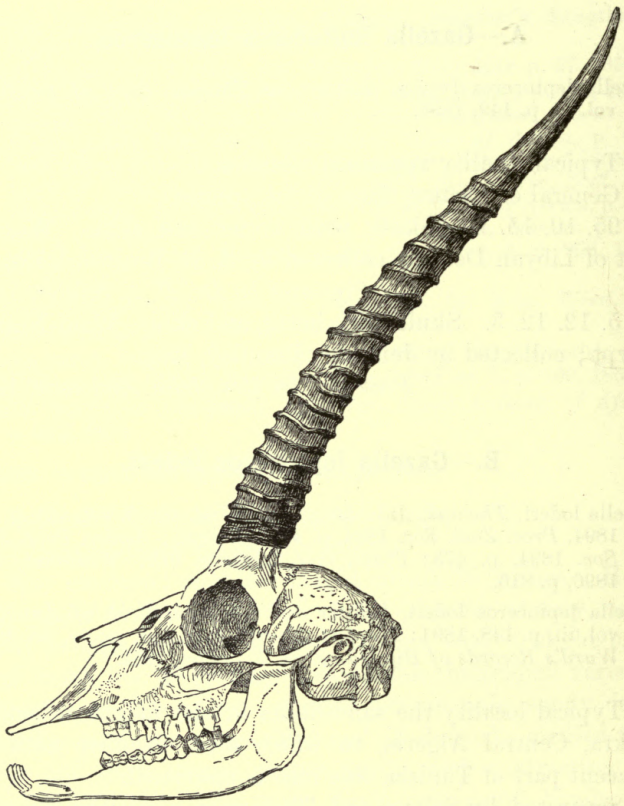

FIG. 15.—SKULL AND HORNS OF RHIM OR LODER'S GAZELLE (*Gazella leptoceros loderi*).

From Thomas, *Proc. Zool. Soc.* 1894.

XVII. GAZELLA DORCAS.

Capra dorcas, *Linn. Syst. Nat.* ed. 10, vol. i, p. 69, 1758, ed. 12, vol. i, p. 96, 1766, *ex* "Gazella africana, cornibus brevibus," *Ray, Quadrupeds*, p. 80, 1693.

Antilope kevella, *Pallas, Misc. Zool.* p. 7, 1766, *Spicil. Zool.* fasc. i, p. 12, 1767, fasc. xii, p. 15, 1777, *ex* "Le Kevel," *Buffon, Hist. Nat.* vol. xii, p. 258, pl. xxvi, 1764; *Müller, Natursyst., Suppl.* p. 54, 1766; *Erxleben, Syst. Regn. Anim.* p. 287, 1777; *Zimmermann, Spec. Zool. Geogr.* p. 543, 1777, *Geogr. Geschichte*, vol. ii, p. 177, 1780; *Gatterer, Brev. Zool.* vol. i, p. 82, 1780; *Schreber, Säugthiere*, pl. cclxx, 1785; *Boddaert, Elenchus Anim.* p. 142, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 187, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 313, 1792; *Link, Beyträge Naturgesch.* vol. ii, p. 1795; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 351,

1801; *Desmarest, Nouv. Dict. Hist. Nat.* vol. xii, p. 380, 1803, vol. xxiv, Tabl. p. 33, 1804, ed. 2, vol. ii, p. 184, 1816; *G. Fischer, Zoognosia*, vol. iii, p. 436, 1814; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 213, vol. v, p. 332, 1827.

(?) Antilope corinna, *Pallas, Misc. Zool.* p. 7, 1766, *ex* "La Corinne," *Buffon, Hist. Nat.* vol. xii, p. 261, pl. xxvii, 1764; *Erxleben, Syst. Regn. Anim.* p. 291, 1777; *Schreber, Säugthiere*, pl. cclxxi, 1785; *Boddaert, Elenchus Anim.* p. 143, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 188, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 313, 1792; *Link, Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Bechstein, Uebersicht vierfüss. Thiere*, vol. ii, p. 645, 1800; *Desmarest, Nouv. Dict. Hist. Nat.* vol. vi, p. 219, 1803, vol. xxiv, Tabl. p. 33, 1804, ed. 2, vol. ii, p. 184, 1816; *G. Fischer, Zoognosie*, vol. iii, p. 430, 1814; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1193, 1818; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 214, vol. v, p. 333, 1827.

Antilope dorcas, *Pallas, Spicil. Zool.* fasc. i, p. 11, 1767, fasc. xii, p. 15, 1777; *Müller, Natursyst., Suppl.* p. 54, 1776; *Erxleben, Syst. Regn. Anim.* p. 285, 1777; *Zimmermann, Spec. Zool. Geogr.* p. 543, 1777, *Geogr. Geschichte*, vol. ii, p. 117, 1780; *Gatterer, Brev. Zool.* vol. i, p. 82, 1780; *Hermann, Tabl. Affin. Anim.* p. 108, 1783; *Schreber, Säugthiere*, pl. cclxix, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 187, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 313, 1792; *Donndorff, Zool. Beyträge*, vol. i, p. 630, 1792; *Link, Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Cuvier, Tabl. Élém. Hist. Nat.* p. 163, 1798, *Dict. Sci. Nat.* vol. ii, p. 225, 1804, *Règne Animal*, vol. i, p. 259, 1817; *Bechstein, Uebersicht vierfüss. Thiere*, vol. ii, p. 644, 1800; *Lacépède, Mém. Inst. Paris, Sci. Phys.* vol. iii, p. 498, 1801; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 350, 1801; *Turton, Linn.'s Syst. Nat.* vol. i, p. 113, 1802; *Desmarest, Nouv. Dict. Hist. Nat.* vol. xxiv, Tabl. p. 32, 1804, ed. 2, vol. ii, p. 183, 1816, *Mammalogie*, vol. ii, p. 453, 1822; *Tiedemann, Zoologie*, vol. i, p. 409, 1808; *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 168, 1814; *G. Fischer, Zoognosia*, vol. iii, p. 426, 1814; *Afzelius. Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Blainville, Bull. Soc. Philom.* 1816, p. 75; *Schinz, Cuvier's Thierreich*, vol. i, p. 328, 1821, *Synop. Mamm.* vol. ii, p. 398, 1845, *Mon. Antilop.* p. 3, pl. i, 1848; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 440, 1822; *Lesson, Man. Mamm.* p. 372, 1827, *Hist. Nat. Anim., Mamm.* vol. x, p. 286, 1836, *Nouv. Tabl. Règne Anim.* p. 176, 1842; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 212, vol. v, p. 332, 1827; *J. B. Fischer, Synop. Mamm.* p. 459, 1829; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Oken, Allgemeine Naturgeschichte*, vol. vii, p. 1369, 1836; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 614, 1841; *Forster, Descrip. Anim.* p. 386, 1844; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 405, 1844, vol. v, p. 403, 1855; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 267, 1847; *Giebel, Säugethiere*, p. 305, 1853–55; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 5, 1863, partim; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 205, 1880.

Cemas dorcas, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 737, 1816.

Cemas kevella, *Oken, op. cit.* p. 738, 1816.

Cemas maculata, *Oken, loc. cit.* 1816.

Cerophorus (Gazella) kevella, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

(?) Cerophorus (Gazella) corinna, *Blainville*, *loc. cit.* 1816.

Dorcas dorcas, *Gray*, *Medical Repository*, vol. xv, p. 307, 1821.

Gazella dorcas, *Ogilby*, *Proc. Zool. Soc.* 1836, p. 137; *Gray*, *List Mamm. Brit. Mus.* p. 56, 1847, *Knowsley Menagerie*, p. 4, pl. iii, 1850, *Proc. Zool. Soc.* 1850, p. 112, *Cat. Ungulata Brit. Mus.* p. 55, 1852, *Cat. Ruminants Brit. Mus.* p. 38, 1872, *Hand-List Ruminants Brit. Mus.* p. 106, 1873; *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853; *Loche*, *Cat. Mamm. Algérie*, p. 13, 1858, *Explor. Algér.*, *Mamm.* p. 67, 1867; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 159, 1869; *Brooke*, *Proc. Zool. Soc.* 1873, p. 537; *Danford and Alston*, *ibid.* 1877, p. 276, 1880, p. 55; *Flower and Garson*, *Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 263, 1884; *Lataste*, *Actes Soc. Linn. Bordeaux*, vol. xxxix, p. 295, 1885, *Cat. Mamm. Tunisie*, p. 36, 1887; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 136, 1889, *Cat. Mamm. Leyden Mus.* (*ibid.* vol. xi) p. 167, 1892; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 157, 1891; *Ward*, *Records of Big Game*, p. 114, 1892, ed. 6, p. 252, 1910, ed. 7, p. 250, 1914; *Lydekker*, *Horns and Hoofs*, p. 180, 1893, *Great and Small Game of Africa*, p. 334, 1899, *Game Animals of Africa*, p. 248, 1908, *Proc. Zool. Soc.* 1911, p. 961; *Thomas*, *Proc. Zool. Soc.* 1894, p. 469; *Sclater*, *ibid.* 1895, p. 523; *Pease*, *ibid.* 1896, p. 812; *Whitaker*, *ibid.* 1896, p. 815; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 99, 1898; *Anderson and de Winton*, *Zool. of Egypt*, *Mamm.* p. 340, pl. lx, 1902; *Lortet and Gaillard*, *Arch. Mus. Lyon*, ser. 4, vol. viii, no. 2, p. 82, 1903; *Alexander*, *From Niger to Nile*, vol. ii, p. 393, 1907; *Beccari*, *Monit. Zool. ital.* vol. xx, p. 1, 1909; *Pocock*, *Proc. Zool. Soc.* 1910, p. 887; *Gaillard*, *Rev. Ethnogr. et Sociol.* 1912, nos. 11 and 12, p. 8; *Blaine*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 292, 1913; *Hartert*, *Novit. Zool.* vol. xx, p. 34, 1913.*

Gazella dorcas sundevalli, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 159, 1869.

Gacella dorcas, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 76, 1907.

(?) Gazella isabella, *Lortet and Gaillard*, *Arch. Mus. Lyon*, ser. 4, vol. viii, no. 2, p. 85, 1903; *Hartert*, *Novit. Zool.* vol. xx, p. 34, 1913.

DORCAS GAZELLE.

Type of *Dorcas*.

Typical locality Egypt.†

Size small or medium, the shoulder-height ranging from 21 or 22 to about 24½ inches. Typically, horns of medium length, and markedly different in shape from those of any other species, being compressed, evenly divergent as they

* In many of the above passages reference to the form now separated as *G. littoralis* is included.

† *Vide* Blaine, *op. cit.*

curve backwards, and approximating terminally, with the tips bent upwards in a well-marked curve; in addition to this simple curvature the middle portion of each horn is bent outwards in a lyre-shape, so that the larger diameter of a transverse section above is in quite a different plane to what it is lower down, and it is in consequence of this lyrate form that the horns, quite apart from the tips, are approximated terminally, whereas in other species such approximation is due solely to the incurving of the tips.* General colour pale sandy fawn, somewhat variable in tone individually; forehead and median face-stripe rufous fawn, generally without a nose-spot, lateral face-stripes brownish fawn; ears rather long (about 4$\frac{5}{16}$ inches), whitish fawn on backs; flank-band brown, considerably darker than back; pygal band indistinct. In a typical specimen the basal length of the skull was 6$\frac{5}{8}$ inches, the maximum breadth 3$\frac{3}{8}$, and the length from muzzle to orbit 3$\frac{3}{8}$ inches; some distinctive features of the skull are mentioned under the heading of *littoralis*. Fine horns measure from 12 to 13$\frac{3}{8}$ inches in length, with a basal girth of from 3$\frac{1}{4}$ to 4$\frac{1}{2}$.

The range includes Egypt, Abyssinia, Kordofan, Tripoli, the Algerian Sahara, and the Lake Chad district.

A.—Gazella dorcas dorcas.

Typical locality Egypt.

Characters those given under the heading of the species.

The range co-extensive with that of the species, exclusive of Abyssinia.

616. *a–d*. Four frontlets and horns. North Africa.
No history.

616, *g–h*. Two frontlets and horns. North Africa.
No history.

616, *i*. Skull, with horns. N. Africa.
Presented by Sir J. Wilkinson.

46. 11. 20. 7. Skull, with horns, and skin (48. 8. 19. 2), female. Kordofan. *Purchased*, 1846.

46. 6. 15. 4. Skull, with horns, and skin, female. Kordofan. *Same history.*

* Sclater and Thomas, *op. cit.*

50. 11. 22. 24. Skeleton. North Africa.
Purchased (*Zoological Society*), 1850.

59. 9. 12. 3. Skin, mounted, immature. North Africa.
Purchased (*Zoological Society*), 1859.

93. 4. 10. 1. Skull, with horns, and skin. Biskra, Algerian Sahara. *Purchased* (*Ward*), 1893.

FIG. 16.—HEAD AND NECK OF DORCAS GAZELLE (*Gazella dorcas*).
Lydekker, *Proc. Zool. Soc.* 1911.

93. 4. 10. 2. Skull, with horns, and skin, female.
Same history.

95. 6. 7. 2. Skin, mounted (fig. 16). Biskra. Head figured, *Proc. Zool. Soc.*, 1911, p. 962.
Presented by Sir E. G. Loder, Bart., 1895.

2. 11. 4. 79 and 81. Two skulls, with horns, and skins, female. Limhersuk, Tripoli; collected by Mr. E. Dods.
Presented by J. I. S. Whitaker, Esq., 1902.

2. 11. 40. 80. Skull, with horns, and skin, female. Koshbi, Tripoli; same collector. *Same history.*

5. 9. 1. 13. Skull, imperfect, with horns, and skin. Rio de Oro, Western Sahara; collected by Herr Riggenbach. *Presented by the Hon. Walter Rothschild,* 1905.

7. 7. 8. 200, 209. Two skulls, with horns, and skin. Yo, Lake Chad; collected by the Alexander-Gosling Expedition. One specimen represents an immature animal. *Presented by the Alexander-Gosling Expedition,* 1907.

9. 7. 3. 1. Skull, with horns, and head-skin. Forty miles W. of Duevin, Kordofan. *Presented by Lord Villiers,* 1909.

The following specimen represents a gazelle with longer limbs and less curved horns than the typical dorcas.

10. 1. 26. 1. Skin, mounted. Between Biskra and Constantine. *Presented by M. V. Hay, Esq.,* 1910.

B.—Gazella dorcas isabella.

Gazella isabella, *Gray, Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, pp. 214 and 231, 1846, *Knowsley Menagerie,* p. 4, 1850, *Proc. Zool. Soc.* 1850, p. 113, *Cat. Ungulata Brit. Mus.* p. 52, 1852, *Cat. Ruminants Brit. Mus.* p. 38, 1872, *Hand-List Ruminants Brit. Mus.* p. 107, 1873; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 233, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien,* vol. lix, pt. 1, p. 591, 1869; *Brooke, Proc. Zool. Soc.* 1873, p. 539; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 65, 1887; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 157, 1891; *Ward, Records of Big Game,* p. 116, 1892, ed. 6, p. 260, 1910; *Sclater and Thomas, Book of Antelopes,* vol. iii, p. 151, pl. lxiv, 1898; *Lydekker, Great and Small Game of Africa,* p. 344, 1899, *Game Animals of Africa,* p. 255, 1908; *Pousargues, Bull. Mus. Paris,* 1901, p. 341; *Anderson and de Winton, Zool. Egypt, Mamm.* p. 347, 1902.

Antilope isidis, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 267, 1847.

Gazella dorcas, *Blanford, Zool. Abyssinia,* p. 261, pl. i, figs. 1, 1 *a*, 1870, nec *Ogilby.*

Gazella isabellina, *Lydekker, Horns and Hoofs,* p. 232, 1893.

Gazella dorcas isabella, *Blaine, Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 294, 1913; *Ward's Records of Big Game,* ed. 7, p. 252, 1914.

Typical (and only) locality Abyssinia.

The Abyssinian form of the dorcas, characterised by its relatively large size (25 inches at shoulder), the less distinctly lyrate, but very variable, horns, the tendency to brownish in the general colour, and the (usually) less distinct flank-

band; a darker nose-patch may develop in the lower part of the rufous median face-stripe in old individuals.

412, *a*. Skull, with horns, and skin. Abyssinia. Type. *No history.*

61. 2. 30. 13. Skull, with horns. Abyssinia. *Presented by W. C. Harris, Esq.*, 1861.

69. 10. 24. 2. Skull, with horns, and skin, female. Amba Valley, Sambur, Abyssinia; collected during the Abyssinian Expedition of 1869 by Dr. W. T. Blanford, and horns figured by him, *op. cit.* fig. 1 *a*. *Presented by the Viceroy and Council of India*, 1869.

69. 10. 24. 101. Skull, with horns. Komayli, near Zulla, Abyssinia; same collection. Horns figured, *op. cit.* fig. 1. *Same history.*

73. 8. 29. 9. Skull, with horns, and (?) skeleton. Dembelas, Abyssinia. *Purchased* (*Gerrard*), 1873.

97. 1. 5. 14. Skull, with horns, and skin. Anseta Valley, Abyssinia; collected by Mr. Essler. Sir Victor Brooke's collection. *Presented by Sir Douglas Brooke, Bart.*, 1897.

GAZELLA, sp. non. det.

10. 3. 12. 15. Imperfect skull, with horns. East of Katrane Bellia, Palestine. *Presented by Douglas Carruthers, Esq.*, 1910.

XVIII. GAZELLA LITTORALIS.

Gazella littoralis, *Blaine*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 295, 1913; *Ward's Records of Big Game*, ed. 7, p. 252, 1914.

(?) Gazella isabella, *Miller*, *Proc. U.S. Nat. Mus.* vol. xlii, p. 171, 1902.*

Typical locality Khorasot, Nubian Desert.

Rather smaller than *dorcas*. Horns shorter than in *dorcas*, regularly diverging from base slightly outwards and then curving backwards, with their tips sharply hooked inwards at right angles, or rather less; general colour soft reddish fawn, with a lighter flank-band, and the dark flank-

* Miller's specimens came from the Nubian desert, the type locality of *littoralis*.

band rich rufous or madder-brown; under-parts white, sharply divided from coloured area, as is also stripe on buttocks; median facial stripe deep rufous, light facial stripes white, and dark ones blackish; a blackish nose-spot ears long, typically $5\frac{9}{16}$ inches (140 mm.), against $4\frac{15}{16}$ inches, (125 mm.) in *dorcas*. Skull long and low, with the brain-case flatter, and the parabola from crown to occiput less nearly vertical than in *dorcas;* basisphenoid more nearly horizontal than in latter; palatal surface of maxillæ in neighbourhood of palatines convex, but anteriorly running into a median groove, and flattening out above palatine foramina into a pair of converging flanges; premaxillæ nearly straight; auditory bullæ small; upper row of cheek-teeth longer than in *dorcas*, but molars narrower.

A.—Gazella littoralis littoralis.

Typical locality Korasot, Nubian Desert.

General characters as above. Maximum width of skull $6\frac{3}{16}$ inches (174—in one case 167 mm.); maximum orbital width $3\frac{1}{6}$ inches (77 mm.); length of upper series of cheek-teeth $2\frac{5}{8}$ inches (56—in one case 53 mm.).

The range includes the Red Sea littoral from Suakin northwards and the adjacent desert tract.

11. 10. 29. 6. Skull, with horns, and head-skin. Khorasot, Nubian Desert. Type. *Presented by W. B. Cotton, Esq.*, 1911.

11. 10. 29. 7. Another specimen. Khor Fagada, Nubian Desert. *Same history.*

11. 10. 29. 8. Skull, with horns. Khorasot. *Same history.*

11. 10. 29. 9. Skull, with horns, and head-skin. Atra Rabai Hills, Nubian Desert. *Same history.*

129, *a*. Skull, with horns, and skin. Red Sea Littoral. *Purchased* (*Cross*).

129, *c*. Skull, with horns, and skin, female. Same region. *Same history.*

38. 4. 16. 19. Imperfect skull, with horns, and skin. Same region. *Purchased*, 1838.

97. 12. 20. 1–2. Two skulls, with horns, and skins, female. Suakin. *Presented by Major W. S. Sparkes*, 1897.

97. 12. 21. 1. Skull, with horns, and skin. Suakin.
Presented by Capt. C. Fleming, 1897.

10. 1. 24. 1. Head, mounted. Suakin.
Presented by G. C. Whitaker, Esq., 1910.

12. 12. 6. 1. Skull, with horns, and skin. Suakin.
Presented by F. M. Carleton, Esq., 1912.

12. 12. 6. 2. Skull, with horns, and skin, female. Suakin. *Same history.*

B.—Gazella littoralis osiris.

Gazella littoralis osiris, *Blaine*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 295, 1913.

Paler than typical race, in which respect the present race resembles *dorcas*, although distinguished by presence of a nose-spot, which is generally wanting in latter; ears shorter than in typical race $5\frac{1}{16}$ inches (128 mm.); horns with a bleached appearance, instead of deep black.

Typical locality Nakheila, near the junction of the Atbara with the Nile, Upper Egypt.

4. 11. 3. 105. Skull, with horns, and skin. Nakheila, Upper Egypt. Type.
Presented by the Hon. N. C. Rothschild, 1904.

4. 11. 3. 104, 106. Two skulls, with horns, and skins, female. Same locality. *Same history.*

4. 11. 3. 107. Skull, with horns, and skin, immature female. Same locality. *Same history.*

4. 11. 3. 108. Skull, with horns, and head-skin. Same locality. *Same history.*

4. 11. 3. 109. Skull, with horns. Same locality.
Same history.

4. 11. 3. 110. Skin, immature. Same locality.
Same history.

XIX. GAZELLA PELZELNI.

Gazella spekei, *Sclater*, *Proc. Zool. Soc.* 1884, p. 450; *Phillips*, *ibid.* 1885, p. 931; nec *Blyth.*

Gazella pelzelni, *Kohl*, *Sitzber. zool.-bot. Ges. Wien*, 1886, *Ann. Hofmus. Wien*, vol. i, p. 70, pls. iii and iv, 1886; *Thomas*, *Proc. Zool. Soc.* 1891, p. 211; *Sclater*, *ibid.* 1892, pp. 100 and 102; *Swayne*, *ibid.* 1892, p. 306, *Seventeen Trips to Somaliland*, p. 316, 1895; *Ward*, *Records of Big Game*, p. 113, 1892, ed. 6, p. 256, 1910, ed. 7,

p. 255, 1914; *Lydekker, Horns and Hoofs*, p. 238, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 253, 1908; *Hoyos, Zu den Aulihan*, p. 178, pl. x, fig. 1; *Elliot, Field Mus. Zool. Publ.* vol. i, p. 119, 1897; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 133, pl. lxii, 1898; *Drake-Brockman, Mammals of Somali.* p. 77, 1910.

Gacella pelzelni, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 77, 1907.

Dhero (Somali); Pelzeln's Gazelle.

Typical locality maritime plains of northern Somaliland, to which zone the species is restricted, being replaced by the next in the interior.

Type in Vienna Museum.

Size medium; shoulder-height probably about 25 inches. Horns of medium length, evenly divergent, with a slight backward curvature, and a rather more marked forward bend at tips; general colour brownish fawn with a rufous tinge; forehead and median face-stripe dark fawn; no nose-spot; lateral face-stripes short and somewhat indistinct; flank-band rufous brown, slightly deeper in tone than back; pygal band distinct, brown. Skull relatively narrow, with long narrow nasals, articulating broadly with premaxillæ; basal length 6⅞, maximum width 3¼, length from muzzle to orbit 3¾ inches. Horns measure from 11½ to 14 inches in length, with a basal girth of from 3½ to 4½, and a tip-to-tip interval of 4¼ to 6¼ inches.

88. 6. 20. 9. Head-skin, in spirit. Berbera district.
Presented by E. Lort Phillips, Esq., 1888.

91. 6. 20. 6. Skin, mounted. Berbera district.
Presented by Herr G. Menges, 1891.

91. 7. 29. 2. Frontlet and horns. Northern Somaliland.
Presented by W. F. Sinclair, Esq., 1891.

92. 2. 5. 5. Skin and head-skin. Berbera district; collected by Lieut.-Col. H. G. C. Swayne.
Presented by Dr. P. L. Sclater, 1892.

94. 2. 21. 8. Skin and two head-skins. Same locality and collector. *Same donor*, 1894.

93. 6. 30. 6. Skin. Webi Shebeli Valley.
Presented by Gen. Sir A. H. Paget, G.C.B., 1893.

6. 5. 4. 15. Skin. Berbera district.
Presented by Dr. R. E. Drake-Brockman, 1906.

XX. GAZELLA SPEKEI.

Gazella spekei, *Blyth*, *Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 172, 1863; *Blanford*, *Zool. Abyssinia*, p. 261, pl. i, fig. 5, 1870; *Brooke*, *Proc. Zool. Soc.* 1873, p. 543; *Kohl*, *Ann. Hofmus. Wien*, vol. i, p. 77, pl. iii, 1886; *Thomas*, *Proc. Zool. Soc.* 1891, p. 210; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 158, 1891; *Sclater*, *Proc. Zool. Soc.* 1892, pp. 100 and 118, 1897, p. 290; *Swayne*, *ibid.* 1892, p. 306, *Seventeen Trips to Somaliland*, p. 316, 1895; *Ward*, *Records of Big Game*, p. 112, 1892, ed. 6, p. 254, 1910, ed. 7, p. 253, 1914; *Lydekker*, *Horns and Hoofs*, p. 234, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 251, 1908; *Hoyos*, *Zu den Aulihan*, p. 179, pl. x, fig. 3, 1895; *Elliot*, *Field Mus. Zool. Pub.* vol. i, p. 120, 1897; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 125, pl. lxi, 1898; *Rothschild*, *Powell-Cotton's Sporting Trip through Abyssinia*, p. 473, 1902; *Drake-Brockman*, *Mamm. of Somali.* p. 75, 1910.

Gazella naso, *Sclater*, *Proc. Zool. Soc.* 1886, p. 504, pl. ii, *James' Unknown Horn of Africa*, p. 268, pl. iii, 1888.

Gacella spekei, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 77, 1907.

Dhero (Somali).

Typical locality plateau of interior of Somaliland.

Type in Indian Museum, Calcutta.

Nearly allied to last, but rather smaller; shoulder-height about 23 to 24 inches. Horns more curved backwards, less evenly divergent and more incurved at tips, general colour pale brownish fawn; forehead and median face-stripe brownish fawn; a distinct blackish nose-patch, in front of which is a puffy inflatable elevation on muzzle; lateral dark face-stripes narrow and indistinct; ears long and narrow, whitish fawn behind; flank-band dark blackish brown, ill-defined; pygal band indistinct. Skull with short broad nasals, barely articulating with premaxillæ; basal length $6\frac{1}{2}$, maximum width $3\frac{3}{8}$, length from muzzle to orbit $3\frac{5}{8}$ inches. Horns measure from $10\frac{3}{4}$ to $11\frac{3}{8}$ inches in length, with a girth of from $3\frac{1}{2}$ to $4\frac{1}{8}$, and a tip-to-tip interval of from $2\frac{5}{8}$ to $5\frac{1}{2}$ inches.

The nose-hump is frequently stated to be restricted to males, but this is not the case.

85. 11. 16. 1. Skull, with horns, and skin. Gerbatir, Somaliland; collected by Herr G. Menges.

Purchased (*Gerrard*), 1885.

85. 11. 16. 2. Skin, immature female. Same locality and collector. *Same history.*

86. 1. 25. 8. Skin. Near Berbera.
Presented by Dr. P. L. Sclater, 1886.

91. 6. 20. 5. Skin, mounted, and skull. Near Berbera.
Presented by Herr G. Menges, 1891.

91. 12. 19. 2. Skull, with horns, and skin. Wagga, Somali Plateau. *Presented by T. W. H. Clarke, Esq.*, 1891.

92. 2. 5. 4. Skull, with horns, and head-skin, female. Near Berbera; collected by Lieut.-Col. H. G. C. Swayne.
Presented by Dr. P. L. Sclater, 1892.

94. 2. 21. 9. Skin and head-skin. Fifty miles from Berbera; same collector. *Same donor*, 1894.

93. 6. 30. 5. Skin. Webi Shebeli Valley.
Presented by Gen. Sir A. H. Paget, G.C.B., 1893.

96. 10. 6. 1. Skeleton and skin. Ganlibbat Range, S.W. of Berbera. *Presented by Ford G. Barclay, Esq.*, 1896.

4. 7. 2. 5. Head, mounted. Somaliland.
Bequeathed by H. Andrew, Esq., 1904.

12. 12. 28. 68–70. Three skulls, with horns, and skins. Somaliland. *Presented by Dr. R. E. Drake-Brockman*, 1912.

XXI. GAZELLA TILONURA.

Antilope melanura, *Heuglin*, *Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 6, 1863, nec *Bechstein.*

Gazella melanura, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 159, 1869.

Antilope tilonura, *Heuglin*, *Reise Weiss. Nil*, p. 315, 1869, *Reise Nordost-Afrika*, vol. ii, p. 101, 1877.

Gazella lævipes, *Brooke*, *Proc. Zool. Soc.* 1873, p. 541, nec *Sundevall.*

Gazella tilonura, *Ward*, *Records of Big Game*, p. 126, 1892, ed. 6, p. 261, 1910, ed. 7, p. 259, 1914; *Lydekker*, *Horns and Hoofs*, p. 233, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 256, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 159, pl. lxvi, 1898; *Anderson and de Winton*, *Zool. Egypt*, *Mamm.* p. 350, 1902; *Lönnberg*, *Novit. Zool.* vol. xxi, p. 157, 1914.

Heuglin's Gazelle.

Typical locality Bogosland, Abyssinia.

Size rather large; shoulder-height about 27 inches. Horns, which are about equal in length to the head, or a

little longer, lyrate, parallel at their bases, then curving outwards, and finally turned sharply inwards at the tips, so as to form distinct hooks; general colour deep rufous sandy; forehead and median face-stripe scarcely more rufous than back; no nose-spot; lateral light face-stripes nearly obsolete on sides of muzzle, but a large ill-defined dull whitish area round eyes; backs of ears scarcely darker than nape; flank-band black, narrow, and separated from white of under-parts by a still narrower fawn band; pygal band wanting; tail sandy at base, elsewhere black. Basal length of skull $7\frac{3}{16}$ inches, maximum breadth $3\frac{3}{4}$, length from muzzle to orbit $4\frac{1}{4}$ inches. Good horns measure from 10 to $11\frac{3}{4}$ inches in length, with a basal girth of from 4 to 5, and a tip-to-tip interval of from 2 to 7 inches.

The range extends southwards to Sennar and the northern Bahr-el-Ghazal.

73. 2. 24. 8–10. Two skins, mounted. Bogosland. *Purchased* (*Gerrard*), 1873.

73. 2. 24. 11. Skin, mounted, female. Same locality. *Same history.*

73. 8. 29. 9. Skeleton. Abyssinia. *Same history.*

. 11. 10. 29. 1. Skull, with horns, immature. Mugatta, Atbara Valley. *Presented by W. B. Cotton, Esq.*, 1911.

11. 10. 29. 2. Skull, with horns, and head-skin. Kituit, Atbara Valley. *Same history.*

11. 10. 29. 3. Skull, with horns, and head-skin. Ishaga, Settit Valley. *Same history.*

11. 10. 29. 4. Skull, with horns, and head-skin, immature. Same locality. *Same history.*

XXII. GAZELLA ALBONOTATA.

Gazella albonotata, *Rothschild*, *Novit. Zool.* vol. x, p. 480, 1903; *Ward*, *Records of Big Game*, ed. 5, p. 264, 1907; *Lönnberg*, *Novit. Zool.* vol. xxi, p. 154, pl. vi, 1914; *Ward's Records of Big Game*, ed. 7, p. 262, 1914.

Gazella rufifrons albonotata, *Lydekker*, *Game Animals of Africa*, p. 258, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 262, 1910.

Typical locality near Kisi, on east side of the White Nile in the Mongalla Province of the Sudan.

Type in Tring Museum.

Size and general colour not yet recorded. Forehead light rufous, becoming almost white at base of horns; lower half of median face-stripe and muzzle black with a few rufous hairs; lateral face-stripes white from eyes to nostrils; cheeks from face-gland to lip dark buff mingled with black, the pale isabelline crown and neck, and the light rufous mixed with white of forehead, becoming almost wholly white between the horns. Horns spreading and backwardly inclined, with the tips incurved, and the ridges pronounced.

The range includes the Mongalla district on the Abyssinian side of the White Nile, extending as far south as Bor, Gondokoro, and Lado. Possibly this gazelle may be a northern race of *G. thomsoni*.

0. 11. 7. 15. Skull, with horns, and skin. About 90 miles east of Lado. *Presented by Dr. E. Donaldson Smith*, 1900.

8. 4. 2. 53. Skull, with horns, and skin. Mongalla district, White Nile; collected by A. L. Butler, Esq.

Purchased, 1908.

XXIII. GAZELLA THOMSONI.

Gazella thomsoni, *Günther*, *Ann. Mag. Nat. Hist.* ser. 5, vol. xiv, p. 427, 1884; *Thomson*, *Masailand*, p. 536, 1885; *Hunter*, *Willoughby's Big Game of E. Africa*, p. 289, 1889; *Ward*, *Records of Big Game*, p. 133, 1892, ed. 6, p. 265, 1910, ed. 7, p. 263, 1914; *True*, *Proc. U.S. Nat. Mus.* vol. xv, p. 473, pl. lxxvii, 1892; *Lydekker*, *Horns and Hoofs*, p. 236, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 259, 1908, *Suppl.* p. 13, 1911; *Lugard*, *E. Africa*, vol. i, p. 534, 1893; *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 285, 1894, *Proc. Zool. Soc.* 1897, p. 434; *Scott-Elliot*, *Proc. Zool. Soc.* 1895, p. 340; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 130, 1895; *Rhoads*, *Proc. Ac. Philadelphia*, 1896, p. 519; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 171, pl. lxviii, 1898; *Johnston*, *Uganda Protectorate*, vol. i, p. 424, pl. facing p. 390, 1902; *Powell-Cotton*, *Unknown Africa*, p. 572, 1904; *Lönnberg*, *Sjöstedts Kilimandjaro-Meru Exped.* p. 45, 1908, *K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 166, 1912, *Novit. Zool.* vol. xxi, p. 157, 1914.

Gacella thomsoni, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 78, 1907.

Eudorcas thomsoni, *Knottnerus-Meyer*, *Sitzber. Ges. nat. Freunde*, 1910, p. 106; *Zukowsky*, *Archiv. Naturgesch.* vol. lxxx, p. 50, 1914.

Including:—

Gazella thomsoni nasalis, *Lönnberg*, *Sjöstedts Kilimandjaro-Meru Exped.* p. 46, 1908; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 6, 1910.

Eudorcas baringoënsis, p. 109, *Baringo district*, nakuroënsis, p. 110, *Nakuro district*, biedermanni, p. 111, *Shirati district*, langheldi, p. 111, *Usukuma*, schillingsi, p. 113, *Lake Natron district*, ndjiriensis, p. 115, *Njiri Swamp*, sabakiensis, p. 115, *east bank of same*, bergeri, p. 116, *Nairobi*, mundorosica, p. 117, *Mundorosi plains*, wembaerensis, p. 119, *Wembaré plains*, manyaræ, p. 120, *Lake Manyara*, ruwanæ, p. 121, *Ruwana*, *Knottnerus-Meyer*, *Sitzber. Ges. nat. Freunde*, 1910.

Eudorcas thomsoni behni, *south of Thoma*, p. 61, *t. dieseneri*, *E. Usukuma*, p. 63, *t. macrocephala*, *Wembare Valley*, p. 68, *t. marwitzi*, *Wembare plateau*, p. 71, *t. dongilanensis*, *Dongila plateau*, p. 74, *t. arushæ*, *Arusha*, p. 77, *t. bergerinæ*, *S. of Kilimanjaro*, p. 80, *Zukowsky*, *Arch. Naturgesch.* vol. lxxx, 1914.

Typical locality Kilimanjaro district.

Size medium; shoulder-height about 25 inches. Horns long, nearly double the length of the head, in form not unlike those of *G. bennetti* on an enlarged scale, but little divergent—in some cases almost parallel—slightly curving backwards for seven-eighths of their length, with the tips bending a little forwards and upwards. General colour deep sandy rufous, with the dark and light markings sharply defined and conspicuous; forehead and median face-stripe blackish rufous, with a black nose-spot; lateral dark face-stripes blackish, light ones, which start from a ring round the eyes and continue to muzzle, white, as are also lips and chin; flank-band black, deep, and extending far forwards, in contact below with white of under-parts; pygal band blackish, narrow; ears rather short; tail sandy at base, elsewhere black. Skull with short, broad, quadrangular nasals, which articulate extensively with the straight, and superiorly but little convex premaxillæ; basal length about $7\frac{3}{4}$ inches, maximum breadth $3\frac{5}{8}$, length from muzzle to orbit $4\frac{1}{4}$ inches. Fine horns measure from 15 to $16\frac{1}{2}$ inches in length, with a basal girth of from $4\frac{1}{4}$ to 5, and a tip-to-tip interval of from 2 to $11\frac{3}{4}$ inches.

The range includes the interior of British and German East Africa, from Lake Rudolf at least as far south as Irangi.

84. 12. 6. 1. Frontlet and horns. Kilimanjaro district. Co-type. *Presented by J. Thomson, Esq.*, 1884.

84. 12. 6. 2. Frontlet and horns. Same locality. Co-type. *Same history.*

88. 12. 15. 1. Skin, mounted, and skull. Masailand, S. W. Kilimanjaro. *Presented by H. C. V. Hunter, Esq.*, 1888.

91. 1. 6. 3. Skin, mounted, and skull. British East Africa. Type of *G. t. nasalis*. The absence of the nose-spot, upon which this supposed race was founded, does not appear to be a constant character of the gazelles of this district. *Presented by Sir F. J. Jackson, K.C.M.G., C.B.*, 1891.

94. 5. 4. 4. Skull, with horns. Masailand.
Presented by Col. Sir F. D. Lugard, K.C.M.G., C.B., 1894.

98. 1. 5. 17–18. Two skulls, with horns. Machakos, B. E. Africa. *Presented by S. L. Hinde, Esq.*, 1898.

98. 1. 5. 19–20. Two skulls, with horns, female. Same locality. *Same history.*

98. 1. 5. 21–24. Four skulls, with horns, 3 immature. Athi Plains, B. E. Africa. *Same history.*

0. 6. 18. 1. Head, mounted, female. Kai, Ilkamba, B. E. Africa. *Presented by R. Crawshay, Esq.*, 1900.

4. 5. 5. 2–3. Two skulls, with horns, and skins. Nakuru, B. E. Africa. *Presented by C. B. C. Storey, Esq.*, 1904.

4. 7. 2. 6. Head, mounted. East Africa.
Bequeathed by H. Andrew, Esq., 1904.

7. 5. 28. 6. Skull, with horns, female. B. E. Africa.
Presented by the Hon. Kenneth Dundas, 1907.

3. Subgenus **NANGER.**

Dama, *Bennett, Trans. Zool. Soc.* vol. i, p. 7, 1833, nec *H. Smith*, 1827.
Nanger, *Lataste, Actes Soc. Bordeaux*, vol. xxxix, p. 297, 1885.
Matschiea, *Knottnerus-Meyer, Arch. Naturgesch.* vol. lxxiii, pt. 1, p. 100, 1907.

Large gazelles, with horns in both sexes, well-developed face-markings, knee-tufts, and the white of the buttocks intruding more or less extensively into the fawn of the back. The range of the group includes the sandy districts of Northern and Eastern Africa; the group being replaced in South Africa by *Antidorcas*.

The three species here recognised are distinguishable as follows:—

A. Pygal band present (except in one race). Horns very long, divergent, without marked terminal hooking ..... *G. granti.*

B. Pygal band wanting (except in one race of *soemmerringi*).

a. Horns shorter, hooked inwards at tips; tail-tip black ..... *G. soemmerringi.*

b. Horns still shorter, hooked forwards and upwards at tips; tail wholly white, or with fawn tip..... *G. dama.*

XXIV. GAZELLA (NANGER) GRANTI.

Antilope soemmerringii (?), *Grant*, *Proc. Zool. Soc.* 1863, p. 3, nec *Cretzschmar.*

Gazella granti, *Brooke*, *Proc. Zool. Soc.* 1872, p. 601, pl. xli, 1873, p. 550, 1878, p. 723; *Sclater*, *ibid.* 1875, p. 527, pl. lix; *Pagenstacher*, *Jahrb. Mus. Hamburg*, vol. ii, p. 38, 1884; *Johnston*, *Kilimanjaro Exped.* p. 394, 1886; *Hunter*, *Willoughby's Big Game of E. Africa*, p. 289, 1889; *Flower and Lydekker*, *Study of Mammals*, p. 342, 1891; *Ward*, *Records of Big Game*, p. 104, 1892, ed. 6, p. 267, 1910, ed. 7, p. 265, 1914; *True*, *Proc. U.S. Nat. Mus.* vol. xv, p. 473, 1892; *Lydekker*, *Horns and Hoofs*, p. 236, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 260, 1908; *Lugard*, *E. Africa*, vol. i, p. 534, 1893; *Jackson*, *Big-Game Shooting* (*Badminton Libr.*), vol. i, p. 298, 1894, *Proc. Zool. Soc.* 1897, p. 453; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 131, 1895; *Donaldson Smith*, *Proc. Zool. Soc.* 1895, p. 868; *A. H. Neumann*, *Elephant-Hunting in E. Africa*, pp. 9 and 10, 1898; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 179, pl. lxix, 1898; *Powell-Cotton*, *Unknown Africa*, p. 573, 1904; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906, p. 240; *Lönnberg*, *Sjöstedts Kilimandjaro-Meru Exped.* p. 46, 1908, *K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 166, 1912; *Heller*, *Smithson. Misc. Collect.* vol. lxi, no. 7, p. 7, 1913.

Gacella granti, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 78, 1907.

Matschiea granti, *Knottnerus-Meyer*, *Arch. Naturgesch.* vol. lxxiii, pt. 1, p. 100, 1907.

Type of *Matschiea.*

Typical locality western Kinyenye, Ugogo, German East Africa.

No type specimen, the species having been named on the evidence of Speke's notes and sketches.

Shoulder-height reaching at least 34 inches. Horns longer than in any other gazelle, evenly but slightly curved backwards, and bending somewhat forwards at tips, degree of divergence variable, basal section elliptical; general colour sandy fawn, with a more or less marked tendency to rufous; forehead and median face-stripe richer fawn, approaching rufous, with a brownish nose-spot; lateral dark

face-stripes almost imperceptible, light stripes white, extending upwards above eyes to horns; flank-band variable, in some cases distinct, in others obsolete (at least in males); white of buttocks varying in extent, typically embracing

FIG. 17.—HEAD OF GRANT'S GAZELLE (*Gazella granti*).

root of tail, of which the crested tip is black. Skull, stout and heavy; basal length in typical race about $9\frac{3}{4}$ inches, maximum breadth $4\frac{3}{8}$, length from muzzle to orbit $5\frac{3}{8}$ inches. The record horn-length (1910) is $30\frac{1}{4}$ inches.

The range includes East Africa, from southern Jubaland and the Lake Rudolf district to Abyssinia, and southwards to Ugogo.

The following "key" to the races—some of which are only provisionally recognised, and may be based on individual herds—is modified from one given by Heller, who regards *petersi* as a distinct species :—

A. Cinnamon of back separated from tail by a broad white rump-patch; black of tail restricted to terminal half.
  a. A dark flank-band ..... *G. g. notata.*
  b. No dark flank-band (in male).
    a^1. A dark pygal band bordering rump-patch.
      a^2. Horns everted and wide-spread, with the tips backwardly hooked ..... *G. g. robertsi.*
      b^2. Horns not everted or backwardly hooked.
        a^3. Horns diverging regularly in an ellipse, with the tips approximated.
          a^4. General colour lightish cinnamon, horns relatively long ..... *G. g. granti.*
          b^4. General colour darker cinnamon, horns shorter ..... *G. g. roosevelti.*
        b^3. Horns more nearly parallel, not outwardly curved.
          a. General colour lighter, no dark flank-band in female ..... *G. g. lacuum.*
          b. General colour darker, a dark flank-band in female ..... *G. g. raineyi.*
    b^1. Pygal band to rump-patch obsolete or very short and narrow ..... *G. g. brighti.*

B. Cinnamon of back dividing rump-patch so as to extend on to upper surface of tail, of which two-thirds may be black.
  a^5. Size large, backward extension of cinnamon on to rump-patch and tail narrow; horns large and divergent ..... *G. g. serengetæ.*
  b^5. Size smaller, backward extension of cinnamon on to rump-patch and tail broad; horns smaller and more nearly parallel ..... *G. g. petersi.*

A.—Gazella granti granti.

Gazella granti typica, *A. H. Neumann*, *Great and Small Game of Africa*, p. 255, 1899; *Thomas*, *Proc. Zool. Soc.* 1900, p. 806; *Lydekker*, *Game Animals of Africa*, p. 262, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 267, 1910.

Gazella granti granti, *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906, p. 243; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 6, 1910; *Heller*, *ibid.* vol. lxi, no. 7, p. 8, 1913.

Typical locality western Kinyene, Ugogo.

Size relatively large (shoulder-height about 34 inches);

general colour lightish cinnamon; white rump-patch large, undivided by a backward continuation of the cinnamon colour of the back, and the whole of the basal portion of the upper surface of the tail white; lateral extension of the rump-patch intruding largely into the body-colour, so as to extend beyond the dark pygal band; no dark flank-band in adult; horns evenly diverging in an ellipsoidal curve, with their tips somewhat approximated. Good horns measure from 27 to 30¼ inches in length, with a basal girth of from 6½ to 7¾, and a tip-to-tip interval of from 11 to 24⅝ inches. According to Heller, the range is restricted to the Ugogo district of German East Africa; and if this be correct and *G. g. roosevelti* a valid race, the under-mentioned British East African specimens will have to be referred to that form.

75. 12. 29. 4. Skull, with horns, and skin, immature female. Mainland opposite Zanzibar.

Presented by Sir John Kirk, G.C.M.G., K.C.B., 1875.

80. 11. 30. 1. Skull, with horns, and skins, immature female. Mombasa. *Same donor*, 1880.

91. 1. 6. 2. Skin, mounted, and skull. Turquel, Suk.

Presented by Sir F. J. Jackson, K.C.M.G., C.B., 1891.

92. 10. 18. 15. Skull, with horns. Same locality.

Same donor, 1892.

1. 8. 9. 78. Skull, with horns, and skin. Naivasha, B. E. Africa.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1901.

1. 8. 9. 78. Skull, with horns, and skin, female. Lake Baringo district, B. E. Africa. *Same history.*

7. 12. 12. 3. Skull. Baringo district.

Presented by J. Rowland Ward, Esq., 1907.

4. 2. 13. 1. Skull, with horns, and skin. Baringo district. *Presented by Capt. C. Berry*, 1904.

0. 3. 27. 18. Skull, with horns, and skin. Guaso-nyiro, north of Mt. Kenia, B. E. Africa.

Presented by the Lord Delamere, 1900.

97. 3. 14. 8. Skull, with horns. Mjungu Mbaba, Taveta, Kilimanjaro district.

Presented by W. C. Fraser, Esq., 1897.

97. 3. 14. 8. Skull, with horns, female. Same locality.

Same history.

2. 6. 15. 5. Skull, with horns. Kinjabé, Rift Valley, B. E. Africa. *Presented by C. S. Betton, Esq.*, 1902.

1. 4. 4. 1. Skull, with horns, and skin. Uganda Railway. *Presented by R. A. Preston, Esq.*, 1901.

1. 4. 4. 2. Skull, with horns, and skin, female. Same locality. *Same history.*

4. 5. 5. 1. Skull, with horns, and skin. Nakuru, B. E. Africa. *Presented by C. B. C. Storey, Esq.*, 1904.

4. 7. 12. 7. Head, mounted.
Presented by H. Andrew, Esq., 1904.

13. 8. 2. 8. Skull, with horns, and head-skin. Lorian Swamp, B. E. Africa. *Presented by I. N. Dracopoli, Esq.*, 1913.

B.—Gazella granti roosevelti.

Gazella granti roosevelti, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 4, 1913.

Typical locality Athi Plains, B. E. Africa.

Type in U.S. National Museum.

Stated to be darker in colour* than the typical race, with smaller and less spreading horns. General colour (in type) vinaceous-cinnamon, paler towards head and on flanks, where it becomes pinkish buff; rump-patch continuous with a large white basal portion of tail, and bordered in front by a broad clove-brown pygal band; flanks with a band of light buff bordering the broad band of pinkish buff above; outside of legs pinkish buff like sides of body; top of head and median line of nose cinnamon-rufous, with a large clove-brown blotch on nose. Females and young males show a dark flank-band and strongly marked pygal band.

According to its describer, this race occupies a considerable area in B. E. Africa.

98. 6. 27. 1. Head, mounted, and skull. Athi Plains.
Presented by C. Ashburnham, Esq., 1898.

N.B.—Some or all of the British East African specimens entered under the heading of the typical race may be referable to the present form, if really entitled to distinction.

* In the original description it is stated in one place that the colour is darker, and in a second lighter; the former is correct.

C.—Gazella granti robertsi.

Gazella granti robertsi, *Thomas, Proc. Zool. Soc.* 1903, vol. ii, p. 119; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 243; *Lydekker, Game Animals of Africa*, p. 262, 1908; *Ward, Records of Big Game*, ed. 6, p. 269, 1910, ed. 7, p. 267, 1914; *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 7, 1913.

Typical locality near Speke Gulf, Victoria Nyanza, in the Usagara district of German East Africa.

Distinguished from typical race by the strong outward curvature and divergence of the horns, of which the tips are backwardly hooked. Good horns measure from 25 to

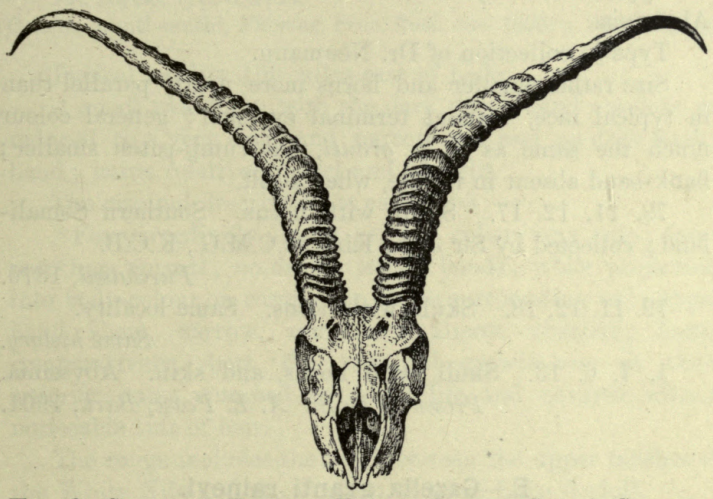

Fig. 18.—Skull and Horns of Usagara Race of Grant's Gazelle (*Gazella granti robertsi*).
From Thomas, *Proc. Zool. Soc.* 1903.

28 inches in length, with a tip-to-tip interval of from 18½ to 28½ inches (in one instance 38½ inches).

Whether this so-called race is really anything more than the product of a single original herd may be doubtful, as heads have come under the writer's observation in which one horn was of the true *granti*, and the other of the *robertsi* type.

3. 6. 12. 1. Skull, with horns, and skin. Near Speke Gulf, Victoria Nyanza. Type (fig. 18).

Presented by F. Russell Roberts, Esq., 1903.

3. 6. 12. 2. Head, mounted, and body-skin. Same locality. *Same history.*

3. 6. 12. 3, Skull, with horns, female. Same locality. *Same history.*

D.—Gazella granti lacuum.

Gazella granti lacuum, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 243; *Lydekker, Game Animals of Africa*, p. 263, 1908; *Ward, Records of Big Game*, ed. 6, p. 268, 1910; *Lönnberg, K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 168, 1912; *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 8, 1913.

Typical locality near Lake Zwai (Zuay), southern Abyssinia.

Type in collection of Dr. Neumann.

Size rather smaller and horns more nearly parallel than in typical race, without terminal eversion; general colour much the same as in *g. granti*, but rump-patch smaller; flank-band absent in female, when adult.

79. 11. 12. 17. Skull, with horns. Southern Somaliland; collected by Sir John Kirk, G.C.M.G., K.C.B. *Purchased*, 1879.

79. 11. 12. 18. Skull, with horns. Same locality. *Same history.*

1. 7. 6. 13. Skull, with horns, and skin. Abyssinia. *Presented by Sir A. E. Pease, Bart.*, 1901.

E.—Gazella granti raineyi.

Gazella granti raineyi, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 6, 1913.

Typical locality Isiola Valley, northern Guaso-nyiro, B. E. Africa.

Type in U.S. National Museum, Washington.

A small form differing from *lacuum* by its darker colour* and the presence of a dark flank-band in the female. Closely resembles *brighti* (*infra*), but distinguished by general presence of dark pygal band to rump-patch.

* The footnote to *G. g. roosevelti* applies also in the case of the present form.

13. 10. 18. 174. Skull, with horns, and skin. N.W. of Lake Baringo, B. E. Africa; collected by W. P. Lane, Esq.

Presented by G. P. Cosens, Esq., 1913.

13. 10. 18. 175. Skull, with horns, and skins. Bakora Plains, east of Mt. Lebor, Uganda; same collector.

Same history.

F.—Gazella granti brighti.

Gazella granti brighti, *Thomas, Proc. Zool. Soc.* 1900, p. 805; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 244; *Lydekker, Game Animals of Africa*, p. 263, 1908; *Ward, Records of Big Game*, ed. 6, p. 268, 1910; *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 8, 1913.

Gazella granti smithi, *Thomas, Proc. Zool. Soc.* 1900, p. 805, errorim.

Typical locality 160 miles east of Lado.

A small pale form, with the dark pygal band obsolete or reduced to a very short and narrow one, and no dark flank-band; horns relatively short and straight.

The original description is as follows:—

"Fur exceedingly short; general colour very pale; face-markings normal; no darker lateral bands; white projection into body-colour on rump deep, quite surrounding tail; pygal band short, narrow, sometimes almost obsolete; horns comparatively short, the youthful growth-boss at their anterior bases retained in adult life and covered with a noticeable tuft of hair."

The range includes the area between the upper reaches of the White Nile and the western shore of Lake Rudolf.

0. 11. 7. 14. Skull, with horns, and skin. A spot 160 miles east of Lado. Type.

Presented by Dr. E. Donaldson Smith, 1900.

99. 9. 1. 1. Skull, with horns, and skin. North-west shore of Lake Rudolf. *Presented by Major R. T. Bright*, 1897.

G.—Gazella granti notata.

Gazella granti notata, *Thomas, Ann. Mag. Nat. Hist.* ser. 6, vol. xx, p. 479, 1897, *Proc. Zool. Soc.* 1900, p. 806; *A. H. Neumann, Elephant Hunting in E. Africa*, p. 238, 1898; *Bryden, Great and Small Game of Africa*, p. 360, 1899; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 243; *Lydekker, Game Animals of Africa*, p. 262, 1908; *Ward, Records of Big Game*, ed. 6, p. 268,

1910; *Hollister, Smithson. Misc. Collect.* vol. lvi, no. 2, p. 7, 1910; *Heller, ibid.* vol. lxi, no. 7, p. 7, 1913.

Gazella notata, *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 191, 1898.

Typical locality western slope of Loroghi Mountains, B. E. Africa.

Distinguished from preceding races by the presence of a strongly marked dark flank-band in both sexes; the pygal band being also well developed.

97. 1. 30. 2. Skin, female. Western slope of Loroghi Mountains. Type. *Presented by A. H. Neumann, Esq.*, 1897.

0. 3. 27. 19–20. Two skulls, with horns, and skin. Gessina, 80 miles N.W. of Mt. Kenia, B. E. Africa. *Presented by the Lord Delamere*, 1900.

99. 10. 15. 1. Skull, with horns, and skin. Turwell Valley, B. E. Africa, 100 miles N.E. of Mt. Elgon. *Presented by Capt. J. D. Ferguson*, 1899.

99. 10. 15. 2. Skull, with horns. Lumian, northern shore of Lake Rudolf. *Same history.*

9. 6. 1. 54. Skin. Boraland, southern Abyssinia. *Presented by Dr. R. E. Drake-Brockman*, 1909.

11. 8. 2. 57. Skull, with horns, and skin, immature female. Same locality. *Same donor*, 1911.

6. 11. 1. 64. Skull, with horns, and skin. Waranto, west of Lake Zwai, N. E. Africa; collected by Mr. P. Zaphiro. *Presented by W. N. McMillan, Esq.*, 1906.

6. 11. 1. 65. Skull, with horns, and skin, immature. Gallo, near Lake Zwai; same collector. *Same history.*

H.—Gazella granti serengetæ.

Gazella granti serengetæ, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 7, p. 5, 1913.

Typical locality Taveta, on western border of Serengeti Plains, Kilimanjaro district, B. E. Africa.

Type in U.S. National Museum, Washington.

Distinguished from all the preceding races by the dark tint of the cinnamon, or fawn, of the back, which extends backwards as a narrow stripe through the middle of the white rump-patch on to the upper surface of the tail, of which only the basal third is white, the remainder being black;

dark pygal band well developed, but flank-band absent; general colour cinnamon-brown. In the female (one specimen) the fawn of the back is not produced backwards to divide the rump-patch, and a dark flank-band is developed.

No specimen in collection.

I.—Gazella granti petersi.

Gazella granti, *Peters*, *Monatsber. Ak. Berlin*, 1879, p. 832, pl. v, nec *Brooke*.

Gazella petersi, *Günther*, *Ann. Mag. Nat. Hist.* ser. 5, vol. xiv, p. 428, 1884; *Lydekker*, *Horns and Hoofs*, p. 238, 1893, *Great and Small Game of Africa*, p. 344, 1899; *A. H. Neumann*, *Elephant-Hunting in E. Africa*, pp. 9 and 10, 1898; *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 187, 1898; *Heller*, *Smithson. Misc. Collect.* vol. lxi, no. 7, p. 5, 1913.

Gazella granti *var.* gelidjiensis, *Noack*, *Zool. Garten*, vol. xxviii, p. 277, 1887.

Gazella granti petersi, *Thomas*, *Proc. Zool. Soc.* 1900, p. 805; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906, p. 243; *Lydekker*, *Game Animals of Africa*, p. 262, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 270, 1910, ed. 7, p. 268, 1914.

Sala (Swahili).

Typical locality the neighbourhood of the mouth of the Tana, East Africa.

Type the skull figured by Peters; probably in the Berlin Museum.

Size rather smaller than in typical race (shoulder-height about 33 inches), and colour darker than in any of the other forms; white rump-patch relatively small, and divided superiorly by a backward prolongation of the body-colour in the form of a broad band extending on to and along the upper surface of the tail; the lateral prolongation of the rump-patch narrower and intruding to a smaller extent into the body-colour than in typical race, so as scarcely, if at all, to overhang the dark pygal band. Horns shorter and less divergent than in typical *granti*, and skull somewhat smaller, with a rather narrower nasal opening. Good horns measure from 20 to 23¾ inches in length, with a basal girth of from 5¼ to 6⅜, and a tip-to-tip interval of from 5¼ to 11 inches.

The range includes the coast districts of East Africa from Mombasa northwards to beyond the Tana.

80. 1. 3. 1. Skin, mounted. East Africa; collected by Sir John Kirk, G.C.M.G., K.C.B. *Purchased* (*Gerrard*), 1880.

92. 10. 18. 16 and 18. Two skulls, with horns. Tana Valley, B. E. Africa.

Presented by Sir F. J. Jackson, K.C.M.G., C.B., 1892.

92. 10. 18. 17. Skull, with horns. Same locality.

Same history.

97. 12. 10. 1. Skull, with horns, and skin. Pika-pika, 40 miles inland from Mombasa.

Presented by L. E. Cairn, Esq., 1897.

12. 7. 2. 2. Skull, with horns. Opposite Saukuri, south bank of Tana River. *Presented by G. Blaine, Esq.*, 1912.

XXV. GAZELLA (NANGER) SOEMMERRINGI.

Antilope soemmerringi, *Cretzschmar, Rüppell's Reise nordl. Afrika, Atlas*, p. 49, pl. xix, 1826, *Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 38, 1842; *J. B. Fischer, Synop. Mamm.* p. 462, 1829; *Rüppell, Neue Wirbelth. Abyssin.* p. 25, 1835; *Lesson, Hist. Nat. Anim.* vol. x, p. 287, 1836, *Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 40, 1838; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 261, 1840; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 616, 1841; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1842, p. 201, 1843, 1845, p. 266, 1847; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 415, 1844, vol. v, p. 405, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 114, pl. xxxiv, fig. 205, 1845; *Schinz, Synop. Mamm.* vol. ii, p. 403, 1845, *Mon. Antilop.* p. 7, pl. v, 1848; *Giebel, Säugethiere*, p. 308, 1853-55; *Heuglin, Petermann's Mittheilungen*, 1861, p. 16, *Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 7, 1863, *Reise Nordost-Afrika*, vol. ii, p. 102, 1877; *Hartmann, Zeitschr. Ges. Erdkunde*, vol. iii, p. 254, 1868.

Gazella soemmerringi, *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 215, pl. xxviii, 1835; *Gray, List Mamm. Brit. Mus.* p. 161, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *Knowsley Menagerie*, p. 5, 1850, *Proc. Zool. Soc.* 1850, p. 114, *Cat. Ungulata Brit. Mus.* p. 59, 1852, *Cat. Ruminants Brit. Mus.* p. 39, 1872, *Hand-List Ruminants Brit. Mus.* p. 107, 1873; *Temminck, Esquiss. Zool. Guiné*, p. 193, 1853; *Sclater, Proc. Zool. Soc.* 1867, p. 817, pl. xxxvii, 1871, p. 701, 1892, p. 100; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 158, 1869; *Blanford, Zool. Abyssinia*, p. 260, 1870; *Brooke, Proc. Zool. Soc.* 1873, p. 549; *Phillips, ibid.* 1885, p. 293; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 137, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 169, 1892; *Thomas, Proc. Zool. Soc.* 1891, p. 210, *Ann. Mus. Genova*, ser. 2, vol. xvii, p. 107, 1896; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 161, 1891; *Swayne, Proc. Zool. Soc.* 1892, p. 305, *Seventeen Trips to Somali-*

land, p. 314, 1895; *Ward, Records of Big Game*, p. 108, 1892, ed. 6, p. 271, 1910, ed. 7, p. 269, 1914; *Lydekker, Horns and Hoofs*, p. 236, 1893, *Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 266, 1908; *Donaldson Smith, Proc. Zool. Soc.* 1895, p. 868; *Hoyos, Zu den Aulihan*, p. 179, pl. x, fig. 6, 1895; *Elliot, Field Mus. Zool. Publ.* vol. i, p. 122, 1897; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 195, pl. lxx, 1898; *Anderson and de Winton, Zool. Egypt, Mamm.* p. 347, pl. lxii, 1902; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 473, 1902; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 240; *Pocock, Proc. Zool. Soc.* 1910, p. 887; *Drake-Brockman, Mammals of Somali.* p. 78, 1910.

Gacella soemmerringi, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 78, 1907.

Gazella (Nanger) soemmerringi, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 260.

Aoul; Soemmerring's Gazelle.

Typical locality Tal E' Sabb, Abyssinia.

Shoulder-height reaching to 35½ inches. Horns moderately long, heavily ridged, with a subcircular cross-section; bending outwards to a greater or less extent, and more or less strongly hooked inwards, or inwards and forwards, at tips. General colour uniform pale fawn, typically without dark flank or pygal bands; forehead and median face-stripe, as well as lateral face-stripes, black or blackish fulvous, the latter very narrow, the black being continued on to sides of muzzle; light stripes white; backs of ears whitish, bordered and tipped with black; white of buttocks occupying a broad area, intruding far into the body-colour, and completely cutting it off from tail, which is white at the root, with the terminal crest black. Basal length of skull about 8⅞ inches, maximum breadth 4¼, length from muzzle to orbit 5⅜ inches. The maximum record horn-length (1910) is 23 inches.

The range extends from the Red Sea littoral in the neighbourhood of Suakin through Abyssinia and Somaliland to the Sennar district of the Sudan.

The named races are distinguishable as follows:—

A. No dark pygal band.
  a. Horns shorter, much bowed outwards.
    a^1. Size smaller.
      a^2. Colour yellowish isabella; nose rusty black..... *G. s. soemmerringi.*

b^2. Colour darker and purer isabella; a blackish mark on nose; horn-tips more sharply bent in..... . *G. s. erlangeri.*

c^1. Colour still darker; nose deep black; horn-tips less sharply bent in..... *G. s. sibyllæ.*

b^2. Size larger (largest)..... *G. s. casanovæ.*

b. Horns longer, less bowed outwards..... *G. s. berberana.*

B. A narrow dark pygal band..... *G. s. butteri.*

A.—Gazella soemmerringi soemmerringi.

Gazella soemmerringi typica, *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 197, 1898; *Lydekker, Game Animals of Africa*, p. 266, 1908; *Ward, Records of Big Game*, ed. 6, p. 273, 1910, ed. 7, p. 271, 1914.

Gazella soemmerringi soemmerringi, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 241.

Typical locality Tal E' Sabb, Abyssinia.

General colour pale isabella-fulvous, without dark pygal or flank bands; horns much bowed outwards with tips turning sharply inwards in a regular curve. Fine horns measure from 15 to 17 inches in length, with a basal girth of from 5 to $5\frac{3}{4}$, and a tip-to-tip interval of from $3\frac{1}{4}$ to 10 inches.

1516, *c*. Skull, with horns, and skin, immature. Abyssinia; collected by Dr. Rüppell. This and the other Abyssinian specimens are practically topo-types of the species. *Purchased.*

69. 2. 2. 15. Skull, with horns. Bogosland; collected by W. Jesse, Esq. during the Abyssinian Expedition of 1868. *Presented by the Viceroy and Council of India*, 1869.

69. 2. 2. 16. Frontlet and horns. Same locality and collector. *Same history.*

73. 2. 24. 7. Skin, mounted. Bogosland; collected by Herr Essler. *Purchased* (*Gerrard*), 1873.

8. 1. 15. 2. Skull, with horns. Dinder Valley, Sudan. *Presented by J. Rowland Ward, Esq.*, 1908.

4. 7. 2. 6. Head, mounted (fig. 19). North-east Africa. *Bequeathed by H. Andrew, Esq.*, 1904.

4. 11. 3. 103. Skull, with horns, and head-skin, female. Nakheila, Upper Egypt. *Presented by the Hon. N. C. Rothschild*, 1904.

98. 2. 12. 1. Skull, with horns, and skin. Suakin, Red Sea littoral. *Presented by Major W. S. Sparkes*, 1898.

FIG. 19.—HEAD OF SOEMMERRING'S GAZELLE (*Gazella soemmerringi*).

B.—Gazella soemmerringi erlangeri.

Gazella (Nanger) soemmerringi erlangeri, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 263.

Typical locality Hawash Valley, Abyssinia.

Type in Berlin Museum.

Closely allied to last, but stated to differ by darker and purer isabella-colour, the presence of a deep blackish brown

mark on nose of old males, and the more sharply bent horn-tips.

No specimen in collection which can be definitely referred to this race.

C.—Gazella soemmerringi sibyllæ.

Gazella (Nanger) soemmerringi sibyllæ, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 260.

Typical locality Singa, Sennar, in the neighbourhood of the Blue Nile.

Type in Berlin Museum.

General colour darker than in typical race, and front of nose deep (in place of rusty) black; slight differences in form of horns also recorded.

46. 6. 2. 79. Skin, mounted and much faded, female; provisionally referred to this race. Sennar.

By exchange with the Stockholm Museum, 1846.

D.—Gazella soemmerringi casanovæ.

Gazella (Nanger) soemmerringi casanovæ, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 265.

Typical locality northern Abyssinia.

Type in Berlin Museum.

Apparently agreeing in general horn-characters with the preceding races, but approximating to *berberana* by its large size, which is stated to be greater than in that race; neck coloured like back, instead of differently, as in *berberana*.

No specimen in collection.

E.—Gazella soemmerringi berberana.

Gazella soemmerringi berberana, *Matschie, Sitzber. Ges. nat. Freunde*, 1893, p. 65, 1912, p. 260; *Rhoads, Proc. Ac. Philadelphia*, 1896, p. 519; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 198, 1898; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 473, 1902; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 941; *Lydekker, Game Animals of Africa*, p. 266, 1908; *Ward, Records of Big Game*, ed. 6, p. 272, 1910, ed. 7, p. 270, 1914.

Typical locality Berbera district, Somaliland.

Type in Berlin Museum.

Distinguished from typical race by larger size, darker colour, and longer horns, which are not so broadly expanded, and have the tips turning partly forwards as well as inwards. Fine horns measure from 19 to 23 inches in length, with a basal girth of from $4\frac{7}{8}$ to $6\frac{3}{4}$, and a tip-to-tip interval of from 2 to $13\frac{1}{2}$ inches.

92. 2. 5. 3. Head, mounted. Near Berbera, Somaliland; collected by Lieut.-Col. H. G. C. Swayne. Figured in the *Book of Antelopes*, vol. iii, p. 198, fig. 82*a*.

Presented by Dr. P. L. Sclater, 1892.

94. 2. 21. 10. Skull, with horns, and skin. Somaliland; collected by Col. Swayne. *Same donor*, 1894.

94. 2. 21. 11. Skull, with horns, and skin, female. Same locality and collector. *Same history.*

91. 12. 3. 3. Skull, with horns. Bendap Mt., Somaliland.

Presented by Gen. Sir A. H. Paget, G.C.B., 1891

91. 12. 3. 4. Skull, with horns, female. Same locality.

Same history.

93. 6. 30. 4. Skin, mounted. Shebeli Valley, Somaliland. *Same donor*, 1893.

12. 10. 31. 103–4. Two pairs of horns, on the frontlets. Purchased at Aden, and doubless imported from Somaliland.

Bequeathed by A. O. Hume, Esq., C.B., 1912.

13. 9. 4. 1–3. Three skulls, with horns. Somaliland.

Presented by H. Hawker, Esq., 1913.

F.—Gazella soemmerringi butteri.

Gazella soemmerringi butteri, *Thomas*, *Proc. Zool. Soc.* 1904, vol. i, p. 4; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906. p. 4; *Lydekker*, *Game Animals of Africa*, p. 267, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 273, 1910, ed. 7, p. 271, 1914; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 260.

Typical locality southward of Dana Valley, Boran-Gallaland.

Distinguished from the typical Abyssinian form by its inferior stature, and the presence of a distinct black pygal band on front edge of white rump-patch; black face-bands, especially those in the line of the eyes, strongly developed, and a faint trace of a flank-band; hair of neck reversed from withers to a point half-way along the nape; horns

relatively slender and long. Basal length of skull $7\frac{13}{16}$ inches (198 mm.), against about $8\frac{11}{16}$ inches (220 mm.) in typical race.

4. 1. 20. 1. Skull, with horns, and skin. South of Dana River, Boran-Gallaland. Type.

Presented by A. E. Butter, Esq., 1904.

XXVI. GAZELLA (NANGER) DAMA.

La Nanguer, *Buffon*, *Hist. Nat.* vol. xii, p. 213, pl. xxiv, 1764.

Antilope dama, *Pallas*, *Misc. Zool.* p. 5, 1766, *Spicil. Zool.* fasc. i, p. 8, 1767, fasc. xii, p. 13, 1777; *Müller*, *Natursyst.*, *Suppl.* p. 53, 1776; *Erxleben*, *Syst. Regn. Anim.* p. 280, 1776; *Zimmermann*, *Spec. Zool. Geogr.* p. 541, 1777, *Geogr. Geschichte*, vol. ii, p. 114, 1780; *Gatterer*, *Brev. Zool.* vol. i, p. 81, 1780; *Hermann*, *Tabl. Affin. Anim.* p. 108, 1783; *Schreber*, *Säugthiere*, pl. cclxiv, 1785; *Boddaert*, *Elenchus Anim.* p. 141, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 183, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 308, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 623, 1792; *Link*, *Beyträge Naturgesch.* vol. ii, p. 98, 1795; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 643, 1800; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 359, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 112, 1802; *Cuvier*, *Dict. Sci. Nat.* vol. ii, p. 243, 1804, *Règne Anim.* vol. i, p. 263, 1817; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xv, p, 334, vol. xxiv, Tabl. p. 32, 1804, *Mammalogie*, vol. ii, p. 458, 1822; *Tiedemann*, *Zoologie*, vol. i, p. 408, 1808; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 170, 1814; *G. Fischer*, *Zoognosia*, vol. iii, p. 409, 1814; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1199, 1818; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 394, 1821; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 206, vol. v, p. 330, 1827; *Lesson*, *Mon. Mamm.* p. 375, 1827, *Hist. Nat. Anim.* vol. x, p. 288, 1836, *Nouv. Tabl. Règne Anim.*, *Mamm.* p. 177, 1842; *J. B. Fischer*, *Synop. Mamm.* p. 463, 1829; *Oken*, *Allgemeine Naturgeschichte*, vol. vii, p. 1375, 1838; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 616, 1839; *Reichenbach*, *Säugethiere*, vol. iii, p. 115, 1845.

Cerophorus (Cervicapra) dama, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Cemas dama, *Oken*, *Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 741, 1816.

Antilope (Dama) nanguer, *Bennett*, *Proc. Zool. Soc.* 1833, p. 2, *Trans. Zool. Soc.* vol. i, p. 7, 1833; *Gervais*, *Dict. Sci. Nat.*, *Suppl.* vol. i, p. 261, 1840; *Lesson*, *Nouv. Tabl. Règne Anim.*, *Mamm.* p. 177, 1842.

Antilope mhorr *var.* β, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 410, 1844, vol. v, p. 404, 1855.

Gazella dama, *Gray*, *Ann. Mag. Nat. Hist.* ser. i, vol. xviii, p. 231, 1846, *Knowsley Menagerie*, p. 5, 1850, *Proc. Zool. Soc.* 1850, p. 114; *Kohl*, *Ann. Hofmus. Wien*, vol. i, p. 79, pl. v, fig. 2, 1886; *Ward*, *Records of Big Game*, p. 116, 1892, ed. 6, p. 274, 1910,

ed. 7, p. 272, 1914; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 209, 1898; *Lydekker, Great and Small Game of Africa*, p. 344, 1899, *Game Animals of Africa*, p. 268, 1908; *O. Neumann, Sitzber. Ges. Nat. Freunde*, 1906, p. 238; *Alexander, From Niger to Nile*, vol. ii, p. 393, 1907.

Gazella mohr, *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 233, 1862; *Gray, Cat. Ruminants Brit. Mus.* p. 39, 1872; *Brooke, Proc. Zool. Soc.* 1873, p. 648.

Gazella nanguer, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 158, 1869.

Nanger dama, *Lataste, Actes Soc. Linn. Bordeaux*, vol. xxxix, p. 174, 1885, by inference from context.

Nanguer, or Nanger (Senegal).

Type of *Dama*, Bennett, and *Nanger* (as represented by the Tunisian race).

Typical locality north-west Africa, probably in the neighbourhood of Lake Chad (*teste* O. Neumann).

Shoulder-height from about 36 to 37 inches. Horns comparatively short, thick, curving strongly backwards at first, and hooked inwards and forwards at tips; no dark flank or pygal band, and the white of the buttocks, which is very variable in extent, including the tail, of which the extreme tip may be fawn; general colour—which may be restricted to neck and back—deep rufous.

The range includes the desert tracts of north-western and northern Africa, from Senegal and Gambia to Dongola. The four races here recognised are distinguishable as follows:—

A. Rufous area extending over body and flanks, well defined from white.

a. Sides of thighs white, the rufous of body not joining that of hind-limbs ..... *G. d. dama.*

b. Sides of thighs and legs rufous, continuous with that of body.

a^1. Rufous area large and forward intrusion of white of rump small ..... *G. d. mhorr.*

b^2. Rufous area more restricted, and forward intrusion of white of rump greater ..... *G. d. permista.*

B. Rufous area mainly restricted to neck and fore part of back, imperfectly defined from white ... *G. d. ruficollis.*

A.—Gazella dama dama.

Antilope dama *var.* occidentalis, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 266, 1847.

Gazella dama typica, *Bryden, Great and Small Game of Africa*, p. 367, 1899; *Lydekker, Game Animals of Africa*, p. 269, 1908; *Ward, Records of Big Game*, ed. 6, p. 275, 1910, ed. 7, p. 273, 1914.

Gazella dama dama, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 240.

Typical locality probably the neighbourhood of Lake Chad.

Colour-pattern much the same as in next race, but white of hind-quarters, although much less extensive than in *ruficollis*, spreading more over body, and uniting on thighs with that of flanks, so as to cut off rufous of outer sides of limbs from that of back. Good horns measure from 12 to 14⅞ inches in length, with a basal girth of from 5⅜ to 6½, and a tip-to-tip interval of from 3¼ to 8½ inches.

The range includes Senegal, Gambia, and the Lake Chad district.

46. 10. 23. 16. Skull, with horns, and skin. Gambia; collected by Mr. T. Whitfield.

Presented by the Earl of Derby, 1846.

4. 5. 21. 1. Skull, with horns, and skin. Lake Chad district. *Presented by Lieut.-Col. G. S. Ellcott*, 1904.

7. 7. 8. 202–4. Three skulls, with horns, and skins, one immature. Yo, Lake Chad; collected during the Alexander-Gosling Expedition.

Presented by the Alexander-Gosling Expedition, 1907.

7. 7. 8. 205–7. Three skulls, with horns, and skins, female. Same locality and collection. *Same history.*

B.—Gazella dama mhorr.

Antilope (Dama) mhorr, *Bennett, Proc. Zool. Soc.* 1833, p. 1, *Trans. Zool. Soc.* vol. i, p. 7, pl. i, 1833; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 261, 1840.

Antilope mhorr, *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 41, 1836; *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 38, 1842; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 416, 1844, partim; *Reichenbach, Säugethiere*, vol. iii, p. 166,

pl. xxxv, fig. 212, 1845; *Schinz*, *Synop. Mamm.* vol. ii, p. 426, *Mon. Antilop.* p. 25, pl. xxvi, 1848.

Antilope mhoks, *Lesson*, *Hist. Nat. Anim.* vol. x, p. 288, 1836.

Gazella mohr, *Gray*, *Ann. Mag. Nat. Hist.* ser. i, vol. xviii, p. 231, 1846, *Knowsley Menagerie*, p. 5, 1850, *Proc. Zool. Soc.* 1850, p. 114, *Cat. Ungulata Brit. Mus.* p. 59, 1852, *Cat. Ruminants Brit. Mus.* p. 39, 1872, *Hand-List Ruminants Brit. Mus.* p. 108, 1873; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 233, 1862; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 158, 1869; *Brooke*, *Proc. Zool. Soc.* 1873, p. 548, partim; *Kohl*, *Ann. Hofmus. Wien*, vol. i, p. 78, 1886; *Flower and Lydekker*, *Study of Mammals*, p. 342, 1891; *Jentink*, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 168, 1892; *Lydekker*, *Horns and Hoofs*, p. 235, 1893.

Gazella mohrr, *Temminck*, *Esquiss. Zool. Guiné*, p. 193, 1853.

Nanger mhorr, *Lataste*, *Actes Soc. Linn. Bordeaux*, vol. xxxix, p. 297, 1885.

Gazella mhorr, *Sclater and Thomas*, *Book of Antelopes*, vol. iii, p. 213, pl. lxxii, 1898; *Hartert*, *Novit. Zool.* vol. xx, p. 35, 1913.

Gazella dama mhorr, *Bryden*, *Great and Small Game of Africa*, p. 367, 1899; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906, p. 240; *Lydekker*, *Game Animals of Africa*, p. 269, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 275, 1910, ed. 7, p. 273, 1914.

MHORR.

Typical locality Wednun, near Tafilat, Mogador, southern Morocco.

Type of *Nanger*.

General colour dull rufous or rufous fawn, becoming deeper and redder anteriorly; face, cheeks, and chin white or whitish fawn, with the forehead below horns and an inconspicuous streak in front of each eye blackish; neck deep rufous, with a white patch on front of throat; white of under-parts extending rather high up on flanks and continued across upper part of fore-leg to unite with that of chest; white of rump including tail, and intruding in form of a wedge into rufous area of body much as in *G. soemmerringi*, not uniting with white of under-parts across upper part of thighs; white and rufous areas strongly demarcated; small tail-tuft brownish or fawn.

The range is restricted to south-western Morocco.

55. 12. 24. 279. Skin, mounted. Wednun, Mogador; collected by W. Willshire, Esq. Type. Length of horns $11\frac{3}{4}$, basal girth 6, tip-to-tip interval $3\frac{3}{4}$ inches.

Purchased (*Zoological Society*), 1855.

C.—Gazella dama permista.

Gazella dama permista, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 239; *Lydekker, Game Animals of Africa*, p. 269, 1908; *Ward, Records of Big Game*, ed. 6, p. 275, 1910, ed. 7, p. 273, 1914.

Typical locality Senegambia.

Type in Berlin Museum.

General coloration very like that of *mhorr*, but the rufous area more restricted, the white of rump extending forwards along sides in the form of a wedge, so as to leave only a narrow bridge connecting rufous of back with that of thigh; upper part of fore-legs wholly white, but front surface below knees rufous; rufous dorsal area smaller than in *mhorr*, extending only halfway down sides of body; whole nasal region white, only a faint dark (not black) streak, which may be absent, below eye, and merely a few rufous hairs between horns. In examples lacking the dark eye-stripe nearly the entire head is white. In a specimen in the Tring Museum the horns measure $8\frac{1}{2}$ inches in length, with a girth of $3\frac{1}{2}$, and a tip-to-tip interval of $5\frac{3}{8}$ inches.

No example in collection.

The specimen to which the following name has been given may be inseparable from this race:—

Gazella mhorr reducta, *Heller, Sitzber. Ges. Isis*, 1906, p. 15, 1907.
Gazella dama reducta, *Lydekker, Game Animals of Africa*, p. 271, 1908.

Founded on a menagerie specimen, without definite locality, and stated to be intermediate between *dama dama* and *d. mhorr*, but nearer to the latter, from which it differs by the smaller horns, the brighter rufous and smaller extent of the coloured area, and the nearly white head, which is fawn only at the back and blackish at the base of the horns.

D.—Gazella dama ruficollis.

Antilope dama, *Lichtenstein, Abhandl. Ak. Berlin*, 1824, p. 226, 1826, *Darstellung. Säugeth.* pls. iii and iv, 1827; *Cretzschmar, Rüppell's Reise nordl. Afrika, Atlas*, pp. 39 & 43, pls. xiv–xvi, 1826; *H. Smith, Griffith's Animal Kingdom*, vol. v, p. 331, 1827, partim; *Hemprich and Ehrenberg, Symbol. Phys., Mamm.* pl. vi, 1828;

Rüppell, Neue Wirbelth. Abyssin. p. 25, 1835, *Verzeichniss Mus. Senckenberg.* pt. 1, p. 38, 1842; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 41, 1838; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1842, p. 201, 1843; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 408, 1844, vol. v, p. 404, 1855; *Schinz, Synop. Mamm.* vol. ii, p. 424, 1845, *Mon. Antilop.* p. 25, pl. xxvi, 1848; *Giebel, Säugethiere*, p. 308, 1853–55; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 6, 1863, *Reise Nordost-Afrika*, vol. ii, p. 103, 1877; *Hartmann, Zeitschr. Ges. Erdkunde*, vol. iii, p. 253, 1868; nec. *Pallas.*

Antilope ruficollis, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 205, 1827; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat Vertebrates*, vol. iii, p. 633, 1868.

Antilope (Dama) addra, *Bennett, Proc. Zool. Soc.* 1833, p. 2, *Trans. Zool. Soc.* vol. i, p. 7, 1833; *Lesson, Hist. Nat. Anim.* vol. x, p. 288, 1836; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 261, 1840; *Reichenbach, Säugethiere*, vol. iii, p. 116, pl. xxxv, fig. 207, 1845.

Antilope dama *var.* orientalis, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 266, 1847.

Gazella ruficollis, *Gray, Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 231, 1846, *Knowsley Menagerie*, p. 5, 1850, *Proc. Zool. Soc.* 1850, p. 114, *Cat. Ungulata Brit. Mus.* p. 60, 1852, *Cat. Ruminants Brit. Mus.* p. 39, 1872, *Hand-List Ruminants Brit. Mus.* p. 108, 1873; *Temminck, Esquiss. Zool. Guiné*, p. 193, 1853; *Ward, Records of Big Game*, p. 117, 1892; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 205, pl. lxxi, 1898; *Lydekker, Great and Small Game of Africa*, p. 344, 1899.

Gazella dama, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 158, 1869; *Brooke, Proc. Zool. Soc.* 1873, p. 347; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 137, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 169, 1892; *Lydekker, Horns and Hoofs*, p. 235, 1893; *nec* Antilope dama, *Pallas.*

Gazella dama ruficollis, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 240; *Lydekker, Game Animals of Africa*, p. 269, 1908; *Ward, Records of Big Game*, ed. 6, p. 274, 1910, ed. 7, p. 273, 1914.

Addra (Dongalese), Ariel (in common with some of the other big gazelles, Arabic).

Typical locality Dongola district, Eastern Sudan.

Types in Senckenberg Museum, Frankfort-on-Maine.

Rufous area greatly restricted, occupying only neck, exclusive of a white gorget, and fore part of back, and gradually shading off into white on sides and rump; a faint rufous tinge on middle line of face, but ears and remainder of head white. Good horns measure from 14 to 15¼ inches in length, with a basal girth of from 4⅜ to 6, and a tip-to-tip interval of from 3⅞ to 15½ inches.

The range includes Dongola and Sennar.

46. 6. 2. 78. Skin, mounted, female. Sennar.

By exchange with the Stockholm Museum, 1846.

48. 8. 19. 1. Skull, with horns, and skin, immature. Kordofan; collected by Parreys. *Purchased*, 1848.

2. 3. 25. 3. Skull, with horns, and skin, female. Forty-five miles west of Omdurman.

Presented by Major H. N. Dunn, 1902.

FIG. 20.—HEAD OF RED-NECKED GAZELLE (*Gazella dama ruficollis*).

2. 8. 5. 5. Skull, with horns. El Obeid, Kordofan.

Same history.

2. 6. 12. 1. Head, mounted (fig. 20). El Ani, 250 miles west of Khartum.

Presented by the Hon. Cuthbert James, 1902.

3. 2. 8. 32. Skin, mounted. Gebel Tueis, 90 miles south of Omdurman. *Presented by Major H. N. Dunn*, 1903

9. 7. 15. 1. Skull, imperfect, with horns, and skin. Sudan; collected by Capt. S. S. Flower. *Purchased*, 1909.

III. Genus ANTIDORCAS.

Antidorcas, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 271, 1847; *Thomas and Sclater, Book of Antelopes*, vol. iii, p. 53, 1897; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1906, p. 237; *Pocock, Proc. Zool. Soc.* 1910, pp. 893 and 897.

Distinguished from *Gazella* by the presence of a large evertible dorsal gland, lined with long white erectile hairs, extending from middle of back to rump, the absence of inguinal glands, and the presence of only two pairs of lower premolars; the number of upper premolars being either three or two. Neumann considers the genus, which is represented by a single South African species, nearly allied to the large gazelles of the subgenus *Nanger*, and the horns—present in both sexes—show a striking similarity to those of *Gazella soemmerringi*, although shorter.

ANTIDORCAS MARSUPIALIS.

La Gazelle à bourse sur le dos, *Allamand, Schneider's ed. Buffon's Histoire Naturelle, Suppl.* vol. iv, p. 142, pl. lx, 1778; *Buffon, Hist. Nat., Suppl.* vol. vi, p. 180, 1782.

Antilope marsupialis, *Zimmermann, Geogr. Geschichte*, vol. ii, p. 427, 1780; *Bechstein, Uebersicht vierfüss. Thiere*, vol. ii, p. 645, 1800.

Antilope euchore, "*Forst.*," *Zimmermann, op. cit.* vol. iii, p. 269, 1783; *Schreber, Säugthiere*, pl. cclxxii, p. 1787; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 344, 1801; *Cuvier, Dict. Sci. Nat.* vol. ii, p. 232, 1804, *Règne Animal*, vol. i, p. 260, 1817; *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 169, 1814, *Darstellung. Säugeth.* pl. vii, 1827; *G. Fischer, Zoognosia*, vol. iii, p. 423, 1814; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Desmarest, Nouv. Dict. Hist. Nat.* vol. ii, p. 185, 1816, *Mammalogie*, vol. ii, p. 455, 1822; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1189, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 237, 1821, *Synop. Mamm.* vol. ii, p. 400, 1845, *Mon. Antilop.* p. 5, pl. iii, 1848; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 441, 1822; *Burchell, Travels in S. Africa*, vol. i, p. 290, 1822, *List Quadrupeds presented to Brit. Mus.* p. 5, 1825; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 208, vol. v, p. 331, 1827; *Lesson, Man. Mamm.* p. 373, 1827, *Hist. Nat. Anim.* vol. x, p. 286, 1836, *Nouv. Tabl. Règne Anim., Mamm.* p. 176, 1842; *Smuts, Enum. Mamm. Cap.* p. 72, 1832; *Jardine, Naturalist's*

Libr., Mamm. vol. iii, p. 213, pl. xxvii, 1835; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Gervais, Dict. Sci. Nat.* vol. i, p. 261, 1840; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 615, 1841; *Forster, Descrip. Anim.* p. 388, 1844; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 414, 1844, vol. v, p. 407, 1855; *Temminck, Esquiss. Zool. Guiné*, p. 193, 1853; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 212, 1880; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 485, 1887.

Antilope saccata, *Boddaert, Elenchus Anim.* p. 142, 1785.

Capra pygargus, *Thunberg, Reisa*, vol. ii, p. 28, 1789.

Antilope saltans, *Kerr, Linn.'s Anim. Kingdom*, p. 312, 1792.

Antilope saltatrix, *Link, Beyträge Naturgeschichte*, p. 79, 1795, nec *Boddaert.*

Antilope saliens, } *Desmarest, Nouv. Dict. Hist. Nat.* vol. xxiv,
Antilope dorsata, } Tabl. p. 33, 1804.

Antilope pygarga, *Thurnberg, Mém. Ac. Sci. St. Pétersb.* p. 315, 1811; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868.

Cerophorus (Gazella) euchore, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Cemas marsupialis, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 738, 1816.

Gazella euchore, *A. Smith, S. African Quart. Journ.* vol. ii, p. 191, 1834; *Harris, Wild Animals S. Africa*, pl. iii, 1840; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1842, pp. 201 and 243, 1843; *Gray, List. Mamm. Brit. Mus.* p. 60, 1843, *List Osteol. Brit. Mus.* pp. 56 and 145, 1847, *Knowsley Menagerie*, p. 6, 1850; *Turner, Proc. Zool. Soc.* 1850, p. 168; *Blanford, Zool. Abyssinia*, p. 262, 1870; *Brooke, Proc. Zool. Soc.* 1873, p. 550; *Drummond, Large Game S. Africa*, p. 426, 1875; *Buckley, Proc. Zool. Soc.* 1876, p. 282; *Bocage, ibid.* 1878, p. 741; *Selous, ibid.* 1881, p. 755; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 264, 1884; *Bryden, Kloof and Karroo*, p. 220, 1889; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 162, 1891; *Flower and Lydekker, Study of Mammals*, p. 342, 1891; *Ward, Records of Big Game*, p. 122, 1892; *Nicholls and Eglington, Sportsman in S. Africa*, p. 29, 1892; *Lydekker, Horns and Hoofs*, p. 238, 1893.

Antidorcas euchore, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1845, p. 271, 1847; *Gray, Proc. Zool. Soc.* 1856, p. 116, *Cat. Ungulata Brit. Mus.* p. 63, 1852, *Cat. Ruminants Brit. Mus.* p. 40, 1872, *Hand-List Ruminants Brit. Mus.* p. 109, 1873; *Layard, Cat. Mamm. S. African Mus.* p. 67, 1861; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 233, 1862; *Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 171, 1863; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 158, 1869; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 169, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 137, 1892; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 55, pl. li, 1897; *Bryden, Great and Small Game of Africa*, p. 332, 1899; *Lydekker, Game Animals of Africa*, p. 244, 1908; *W. L. Sclater, Fauna S. Africa, Mamm.* p. 209, 1900; *Major, Proc. Zool. Soc.* 1904, vol. i, p. 419; *Ward, Records of Big Game*, ed. 6, p. 238, ed. 7, p. 275, 1914; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Antidorcas marsupialis, *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 75, 1907; *Pocock*, *Proc. Zool. Soc.* 1910, p. 893.

Springbok, or Springbuck.

Typical locality Cape Colony.

Shoulder-height 31 to 32 inches. Horns sublyrate, with the tips strongly incurved, and in general form very similar to those of *Gazella soemmerringi*, but shorter. General colour bright rufous fawn, with a broad blackish flank-band and indistinct pygal band; face wholly or mainly white (wholly or partially fawn in young), with a narrow rufous streak running from aperture of each face-gland to muzzle; crown and middle of forehead like back; backs of ears white or pale fawn; hairs of dorsal gland, rump, basal portion of tail, under-parts, and inner and hind surfaces of limbs white; tip and crest of tail white. Good horns measure from 14 to $19\frac{1}{8}$ inches in length, with a basal girth of from 5 to $6\frac{1}{2}$, and a tip-to-tip interval of from $3\frac{3}{4}$ to $20\frac{1}{4}$ inches.

The range includes South Africa, as far north as the Zambesi on the east, and Mossamedes on the west.

Two races appear distinguishable:—

A. Face wholly white; eye-stripe narrow..... *A. m. marsupialis.*
B. Forehead in front of horns chestnut; eye-stripe broader..... *A. m. centralis.*

A.—Antidorcas marsupialis marsupialis.

Typical locality probably southern Cape Colony.

Face wholly white; eye-stripe narrow. Face of young, according to W. L. Sclater, fawn in middle line and white on sides.

618, *c*. Pair of horns. Amaryllis Station, Upper Orange River. *Presented by Dr. W. J. Burchell, about* 1817.

618, *d*. Frontlet and horns. South Africa. *No history.*

42. 4. 11. 1. Skin, mounted. South Africa; collected by Sir Andrew Smith. *Purchased* (*S. African Museum*), 1842.

39, *c*. Skin, immature female. South Africa. *Purchased* (*Turner*), *about* 1846.

46. 7. 2. 3. Skin, mounted, immature female, and skull (46. 10. 26. 19), with horns. South Africa. *Purchased* (*Turner*), 1846.

46. 4. 25. 22. Frontlet and horns. South Africa.
Purchased (*Argent*), 1846.

46. 10. 24. 2. Frontlet and horns. South Africa.
Same history.

59. 2. 11. 3. Skeleton. South Africa.
Purchased (*Zoological Society*), 1859.

89. 2. 2. 5. Frontlet and horns, female. Natal.
Presented by Morton Green, Esq., 1889.

96. 11. 28. 8. Skin, mounted, and skull. Mahemfontein, Orange River Colony. *Presented by F. C. Selous, Esq.*, 1896.

B.—*Antidorcas marsupialis centralis*, subsp. n.

Typical locality Deelfontein, Cape Colony.

Upper part of forehead in front of horns chestnut; eye-

FIG. 21.—HEAD OF DEELFONTEIN SPRINGBUCK (*Antidorcas marsupialis centralis*).

stripe broad; size apparently larger than in typical race. Face of young wholly fawn.

2. 12. 1. 34. Skin, immature, mounted. Deelfontein, Cape Colony; collected by Mr. C. H. B. Grant.

Presented by Lieut.-Col. A. T. Sloggett, C.M.G., 1902.

2. 12. 1. 35. Skull, with horns, and skin. Same locality and collector. *Same history.*

2. 12. 1. 41. Skull, with horns. Same locality and collector. *Same history.*

2. 12. 1. 42. Head, mounted (fig. 21). Same locality and collector. Type. *Same history.*

3. 1. 4. 60. Skull and skin, immature female. Same locality and collector. *Same donor*, 1903.

3. 3. 6. 25–28. Four fœtuses, in spirit. Same locality and collector. *Same history.*

IV. Genus LITHOCRANIUS.

Lithocranius,* *Kohl, Ann. Hofmus. Wien*, vol. i, p. 79, 1886; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 227, 1898; *Pocock, Proc. Zool. Soc.* 1910, p. 896.

Distinguished from other members of the subfamily by the great elongation of the neck and limbs, in the latter of which the lateral hoofs are minute, the presence of four teats, and of a bare dark glandular area below each eye, as well as by the structure of the feet, in which the folded interungual membrane extends only a little more than half the distance between the "heels" and the hind edges of the front of the hoofs. Inguinal glands wanting; three pairs of lower premolars; skull long and low, the elongation being particularly noticeable in the portion behind the horns, of which the bones are extremely hard and solid; auditory bullæ low and opaque; lachrymal depressions shallow; premaxillæ not reaching nasals; lower jaw slight and slender. Horns, which are present only in males, of a sublyrate gazelle-like type, with their points curved forwards, or forwards and upwards.

Represented by a single large Somali and East African species.

* *Litocranius* in original.

LITHOCRANIUS WALLERI.

Gazella walleri, *Brooke*, *Proc. Zool. Soc.* 1878, p. 929, pl. lvi; *Sclater*, *ibid.* 1884, p. 538, pl. xlix; *Phillips*, *ibid.* 1885, p. 931; *Hunter*, *Willoughby's Great Game of East Africa*, p. 289, 1889; *Flower and Lydekker*, *Study of Mammals*, p. 342, 1891; *Inverarity*, *Journ. Bombay Nat. Hist. Soc.* vol. vi, p. 459, 1891.

FIG. 22.—HEAD OF GERENUK (*Lithocranius walleri*).

Lit[h]ocranius (Gazella) walleri, *Kohl*, *Ann. Hofmus. Wien*, vol. i, p. 79, pl. v, fig. 3 and pl. vi, fig. 1, 1886.

Lithocranius walleri, *Thomas*, *Proc. Zool. Soc.* 1891, p. 207, *Ann. Mus. Genova*, ser. 2, vol. xvii, p. 107, 1896; *Sclater*, *Proc. Zool. Soc.* 1892, p, 101, 1893, pp. 101 and 118; *Swayne*, *ibid.* 1892, p. 305, 1895, p. 305, *Seventeen Trips to Somaliland*, p. 312, 1895; *Ward*, *Records of Big Game*, p. 134, 1892, ed. 6, p. 280, 1910, ed. 7,

p. 278, 1914; *Lydekker, Horns and Hoofs*, p. 241, 1893, *Great and Small Game of Africa*, p. 379, 1899, *Game Animals of Africa*, p. 273, 1908; *Jackson, Big Game Shooting* (*Badminton Libr.*), vol. i. p. 307, 1894; *Matschie, Säugeth. Deutsch-Ostafrika*, p. 132, 1895; *Hoyos, Zu den Aulihan*, p. 10, 1895; *Rhoads. Proc. Ac. Philadelphia*, 1896, p. 519; *Elliot, Zool. Publ. Field Mus.* vol. i, p. 226, 1897, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 80, 1907; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 229, pl. lxxiv, 1898; *O. Neumann, Sitz. Ges. nat. Freunde*, 1899, p. 21; *Drake-Brockman, Mammals of Somali.* p. 80, 1910; *Pocock, Proc. Zool. Soc.* 1910, p. 896; *Lönnberg, K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 170, 1912.

GERENUK.

Typical locality Juba Valley, Jubaland, south of Italian Somaliland.

Shoulder-height about 39 inches. General colour rich chestnut or cinnamon rufous, sharply bounded on upper part of flank by a lighter band, but without dark flank-band; median line of forehead deep rufous; a whitish ring round eye, interrupted by a glandular area, which is blackish purple; backs of ears pale fawn, as are outer surfaces of limbs; tail rufous above, whitish below, crest black; white of hams, which is very narrow, running up by sides of tail to intrude into body-colour. Horns thick, oval in section, closely ridged, with the middle portion more or less lyrate, and the tips curving forwards; good specimens measure from 14 to 17 inches in length, with a basal girth of from 5 to $5\frac{3}{4}$, and a tip-to-tip interval of from $2\frac{3}{4}$ to $6\frac{3}{8}$ inches.

The two races are distinguishable as follows:—

A. Size smaller, colour brighter, knee-tufts black, or black and brown..... *L. w. walleri.*

B. Size larger, colour duller, knee-tufts brown..... *L. w. sclateri.*

A.—Lithocranius walleri walleri.

Typical locality Juba Valley.

Size comparatively small, with proportionately short horns and neck; general colour bright cinnamon-rufous; knee-tufts black; white of under surface forming a distinct patch at side of root of tail.

The range extends as far southwards as the plains at the foot of Kilimanjaro.

97. 7. 29. 1. Skull, with horns. Coast near Juba River;

collected by Sir John Kirk, G.C.M.G., by whom it was given to a Mr. Waller, after whose death it was lent by his brother, Gerald Waller, Esq., to Sir Victor Brooke for description. Co-type. *Presented by the Rev. C. J. Scott*, 1897.

82. 6. 21. 1. Pair of horns. Kismayu, East Africa; collected by Sir John Kirk, G.C.M.G., etc. *Purchased*, 1882.

89. 8. 13. 14. Skin. Kilimanjaro district. *Presented by H. C. V. Hunter, Esq.*, 1889.

4. 7. 2. 4. Head, mounted. East Africa. *Bequeathed by H. Andrew, Esq.*, 1904.

13. 8. 2. 10. Skull, with horns. José, south central Jubaland. *Presented by I. N. Dracopoli, Esq.*, 1913.

13. 9. 6. 1. Skull, with horns, and skin. Kageri Valley, Ankoli, Uganda. *Presented by Capt. Fisher*, 1913.

B.—Lithocranius walleri sclateri.

Lithocranius sclateri, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1899, p. 19; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 228, 1900; *Lönnberg, K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 170, 1912 (as a subspecies).

Lithocranius walleri sclateri, *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 473, 1902; *Lydekker, Game Animals of Africa*, p. 273, 1908; *Ward, Records of Big Game*, ed. 6, p. 281, 1910, ed. 7, p. 279, 1914.

Typical locality northern Somaliland.

Type probably in the collection of Mr. C. G. Schillings.

Size larger than in typical race; colour less rufous; knee-tufts brown; white of under surface forming merely a narrow line on side of tail. Nasals longer.

The following are the dimensions, in millimetres, of a skull of *L. w. sclateri* from Berbera, and of two skulls of *L. w. walleri*, respectively from Kibaya and Pangani:

	L. w. sclateri.	L. w. walleri.
Length of upper tooth-row	56	51 .. 46
„ „ premaxillæ	66	57 .. 55
„ „ nasals	74	54 .. 49

The southern limit of the range is still unknown.

79. 11. 12. 19. Skull, with horns. Southern Somaliland; collected by Sir John Kirk, G.C.M.G. *Purchased*, 1879.

85. 6. 19. 6–7. Two skulls, with horns. Same locality and collector. *Purchased*, 1885.

85. 11. 28. 1. Skull, with horns, and skin. Gerbatir, near Berbera; collected by Herr J. Menges.
Purchased, 1885.

85. 11. 28. 2. Skull and skin, female. Deymote, Somaliland; same collector. *Same history.*

85. 11. 28. 3. Skull, with horns, and skin. Bulhar, Somaliland; same collector. *Same history.*

86. 1. 25. 5–6. Two skins. Plateau south of Berbera; same collector. *Presented by Dr. P. L. Sclater*, 1886.

86. 11. 9. 1. Skull, female. Somaliland.
Presented by E. Lort Phillips, Esq., 1886.

91. 6. 20. 3–4. Skins, male and female, mounted, and skulls. Near Berbera; collected by Herr Menges.
Purchased, 1891.

91. 12. 19. 3. Skull, with horns, and skin. Near Buroa Wells, Somaliland.
Presented by T. W. H. Clarke, Esq., 1891.

92. 12. 6. 1. Skull, with horns, and skin. Fifty miles south-west of Berbera.
Presented by Capt. J. R. Harkness, 1892.

96. 6. 8. 1. Skeleton, mounted. Somaliland.
Purchased (*Gerrard*), 1896.

9. 6. 1. 53. Skin. Foot-hills of Golis Range, south of Berbera. *Presented by Dr. R. E. Drake-Brockman*, 1909.

10. 10. 3. 44. Skull, with horns, and skin. Upper Shebeli Valley, Somaliland. *Same donor*, 1910.

12. 10. 31. 101–2. Two pairs of horns, on the frontlets. Purchased at Aden, and doubtless imported from Somaliland.
Bequeathed by A. O. Hume, Esq., C.B., 1912.

13. 9. 4. 4. Skull, with horns. Somaliland.
Presented by H. Hawker, Esq., 1913.

Subfamily xv.—ORYGINÆ.*

Large antelopes, with long horns, either straight, backwardly curved in a scimetar-like fashion, or twisted in a corkscrew-like heteronymous spiral, which are present and of

* Equivalent to *Hippotraginæ* of *The Book of Antelopes*, a term which would have to be changed if the generic name *Hippotragus* be replaced; see Pocock, *Proc. Zool. Soc.* 1910, p. 907.

approximately equal size in both sexes. Muzzle hairy; no face-glands or inguinal glands; tail long and more or less tufted at tip; two pairs of teats; lateral hoofs present; feet constructed on the same general type as in the *Caprinæ* (vol. i, p. 72) with glands in both pairs, which consist of a thick-walled, elongated sac, discharging by an orifice situated close to summit of interungual web, or (*Addax*) the whole gland small and opening behind an excrescence from the top of the web; face-markings, which are present in the young, of a gazelline type, when fully developed; these, and apparently the foot-glands, indicating some kind of relationship with the *Antilopinæ*. Skull heavy, without supraorbital pits or lachrymal depressions, and with small or no lachrymal vacuities; upper molars with tall subquadrangular crowns, severally furnished with an accessory column on inner side, and thus closely resembling those of the *Bovinæ*.

The range of the group includes the more open districts of Ethiopian Africa, together with Mesopotamia and Arabia.

The three genera are distinguishable as follows:—

A. Hoofs normal; horns straight or sabre-like.
  a. Horns arising behind eye-sockets, and sloping backwards, at least at first, nearly in line of face. *Oryx*.
  b. Horns arising above eye-sockets nearly vertically. *Hippotragus*.
B. Hoofs low, flat, and broadly rounded in front; horns forming a corkscrew-like spiral ..... *Addax*.

I. Genus ORYX.

Oryx, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 41, 1899; *Pocock*, *Proc. Zool. Soc.* 1910, p. 907.

Size medium or large. Horns, which are long, cylindrical, and ridged in their basal halves, arising behind eye-sockets and inclined backwards, for at least their basal portion, approximately in the plane of the face, after which they either continue in the same line, diverging gradually, or sweep backwards in a scimetar-like curve; tail with a long, thick terminal tuft; direction of dorsal and nuchal hairs, in advance of a whorl behind middle of back or on rump, reversed. Skull relatively large, with small lachrymal vacuities and the premaxillæ reaching the nasals.

Range co-extensive with that of subfamily.

The four species are distinguishable as follows:—

A. Horns straight, or nearly so; neck coloured like body.
  a. Size large; body fawn; limbs whitish, with black markings.
    a'. Throat frequently with a tuft; black nose-patch and eye-stripes uniting below so as to form a "head-stall" to muzzle ..... *O. gazella.*
    b'. No throat-tuft; nose-patch and eye-stripes not uniting below..... *O. beisa.*
  b. Size smaller; body whitish; limbs, with exception of pasterns, brown..... *O. leucoryx.*

B. Horns sabre-shaped; neck and front of shoulders coloured differently to body..... *O. algazel.*

I. ORYX GAZELLA.

Capra gazella, *Linn.*, *Syst. Nat.* ed. 10, vol. i, p. 69, 1758, ed. 12, vol. i, p. 96, 1766; *Müller*, *Natursyst.* vol. i, p. 412, 1773.

Antilope bezoartica, *Pallas*, *Misc. Zool.* p. 8, 1766; *Müller*, *Natursyst.*, *Suppl.* p. 55, 1776; *Zimmermann*, *Spec. Zool. Geogr.* p. 538, 1777; *Gatterer*, *Brev. Zool.* vol. i, p. 79, 1780; nec *Linn.*

Gazella recticornis, *Pallas*,* *Nov. Comm. Ac. Petrop.* vol. xiii, p. 468, 1766.

Antilope recticornis, *Erxleben*, *Syst. Regn. Anim.* p. 272, 1777; *Gatterer*, *Brev. Zool.* vol. i, p. 78, 1786.

Antilope oryx, *Pallas*, *Spicil. Zool.* fasc. xii, pp. 16 and 61, 1777; *Zimmermann*, *Geogr. Geschichte*, vol. ii, p. 107, 1780; *Hermann*, *Tabl. Affin. Anim.* p. 108, 1783; *Schreber*, *Säugthiere*, pl. cclvii, 1784; *Boddaert*, *Elenchus Anim.* p. 139, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 189, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 315, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 636, 1792; *Link*, *Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Daudin*, *Lacépède's Buffon*, vol. xiv, p. 182, 1799; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 302, 1801; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxiv, Tabl. p. 32, 1804, *Mammalogie*, vol. ii, p. 473, 1822; *Turton*, *Linn.'s Syst. Nat.* p. 114, 1806; *G. Fischer*, *Zoognosia*, vol. iii, p. 425, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 219, 1815; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1177, 1818; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 391, 1821, *Synop. Mamm.* vol. ii, p. 434, 1845, *Mon. Antilop.* p. 31, pl. xxxv, 1848; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 444, 1822; *Burchell*, *Travels in S. Africa*, vol. ii, p. 23, 1824; *Lesson*, *Man. Mamm.* p. 385, 1827; *J. B. Fischer*, *Synop. Mamm.*

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* "Cornu . . . . *Gazellæ recticornis*, quam hodie sola . . . . Africa alit." Although this has been quoted as *Gazella recticornis* by Erxleben, and also by Sclater and Thomas, it does not appear to have been intended as a technical name, any more than does "*Gazellæ* . . . . *Indicæ*" in a later passage.

p. 478, 1829; *Smuts*, *Enum. Mamm. Cap.* p. 71, 1832; *Rüppell*, *Neue Wirbelth. Abyssin.* p. 16, 1835; *Owen*, *Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Wagner*, *Säugethiere*, vol. v, p. 1177, 1836, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 476, 1844, vol. v, p. 436, 1855; *Waterhouse*, *Cat. Mamm. Mus. Zool. Soc.* p. 41, 1838; *Oken*, *Allgemeine Naturgeschichte*, vol. vii, p. 139, 1838; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 617, 1841; *Reichenbach*, *Säugethiere*, vol. iii, p. 121, pl. xxxv, 1845; *Giebel*, *Säugethiere*, p. 294, 1853–55; *Huet. Bull. Soc. Acclim.* ser. 4, vol. iv, p. 483, 1887.

Antilope pasan, *Daudin*, *Lacépède's Buffon*, vol. xiv, p. 182, 1799.

Antilope (Bubalis) oryx, *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 155, 1814.

Cemas pasan, *Oken*, *Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 741, 1816.

Cerophorus (Oryx) oryx, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Onyx onyx, *Gray*, *Medical Repository*, vol. xv, p. 307, 1821, misprint for Oryx oryx.

Oryx oryx, *Jardine*, *Naturalist's Libr.*, *Mamm.* vol. iii, p. 204, 1835; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 135, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 166, 1892; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1893, p. 102; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, p. 131, 1896.

Oryx capensis, *Ogilby*, *Proc. Zool. Soc.* 1836, p. 137; *A. Smith*, *S. African Quart. Journ.* vol. ii, p. 187, 1834; *Harris*, *Wild Animals S. Africa*, p. 38, pl. ix, 1840; *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1845, p. 207, 1847; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 178, 1869; *Buckley*, *Proc. Zool. Soc.* 1876, p. 289, 1877, p. 455; *Brehm*, *Thierleben*, *Säugeth.* vol. iii, p. 238, 1880; *Bryden*, *Kloof and Karroo*, p. 292, 1889.

Oryx gazella, *Gray*, *List. Mamm. Brit. Mus.* p. 156, 1843, *Ann. Mag. Nat. Hist.* ser. i, vol. xviii, p. 232, 1846, *Proc. Zool. Soc.* 1850, p. 134, *Knowsley Menagerie*, p. 7, 1850, *Cat. Ungulata Brit. Mus.* p. 105, 1852, *Cat. Ruminants Brit. Mus.* p. 35, 1872, *Hand-List Ruminants Brit. Mus.* p. 104, 1873; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 240, 1862; *Sclater*, *Proc. Zool. Soc.* 1872, p. 604; *Drummond*, *Large Game S. Africa*, p. 426, 1875; *Selous*, *Proc. Zool. Soc.* 1881, p. 755, *A Hunter's Wanderings in S. Africa*, p. 212, 1881; *Bocage*, *J. Sci. Lisboa*, ser. 2, vol. v, p. 26, 1890; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 155, 1891, *Fauna S. Africa*, *Mamm.* vol. i, p. 225, 1900; *Flower and Lydekker*, *Study of Mammals*, p. 343, 1891; *Ward*, *Records of Big Game*, p. 143, 1892, ed. 6, p. 290, 1910, ed. 7, p. 288, 1914; *Nicolls and Eglington*, *Sportsman in S. Africa*, p. 42, 1892; *Lydekker*, *Horns and Hoofs*, p. 246, 1893, *Great and Small Game of Africa*, p. 382, 1899, *Game Animals of Africa*, p. 280, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 57, pl. lxxxii, 1899; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1906, p. 245; *Elliot*, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 83, 1907; *Pocock*, *Proc. Zool. Soc.* 1910, p. 907; *Roberts*, *Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

GEMSBOK; GEMSBUCK.

Type of genus.

Typical locality some part of the desert districts of

south-western Africa, from Bechuanaland northwards to Mossamedes, which constitutes the range of the species.

The largest species; shoulder-height about 48 inches. Horns long and straight. General colour greyish tawny; head whitish with a black frontal patch, nasal patch, and eye-stripe, the two latter of which unite to form a girdle round muzzle, and also join a cheek-stripe, which, after junction with its fellow, is continued downwards as a black throat-stripe; muzzle, chin, and lips white; tips and adjacent part of margins of ears black; black hairs of throat-stripe forming a fringe, frequently elongated into a tuft about half-way down; nape with a blackish mane, continued as a black line along back to rump, which is black or suffused with black above, the black extending on to the tail and embracing the whole of its terminal tuft; from black area of chest a broad black flank-stripe is continued backwards to lower part of thighs, where it expands into a patch embracing outer sides of legs as far down as hocks, and thence extending to inner side; outer and inner sides of fore-legs black from shoulders to knees, although there may be some white on inner surface; shanks white with a black spot on front surface of anterior pair, and a similar spot or streak on that of hind pair; under-parts white. Basal length of skull about 14½ inches. Fine horns measure from 43 to 47½ inches in length, with a basal girth of from 6¼ to 8⅛, and a tip-to-tip interval of from 17½ to 33¾ inches.

637, *a*. Single horn. S. Africa.
Old collection, no history.

39. 12. 26. 2–3. Two heads, mounted. S. Africa. (Nos. 637, *b* and *c* of *Cat. Osteol.*) *Purchased* (*Stevens*), 1839.

46. 6. 1. 2. Skull, with horns. S. Africa. (No. 637, *h*, *Cat. Osteol.*) *Purchased* (*Stevens*), 1846.

48. 6. 28. 3. Skull, with horns. S. Africa. (No. 637, *e*, *Cat. Osteol.*) *Purchased* (*Stevens*), 1846.

55. 11. 26. 13. Skin, immature. From an animal born in Paris. *Purchased* (*Parzudaki*), 1855.

57. 7. 10. 26. Skin, immature. S. Africa; collected by Verreaux. *Purchased* (*Baker*), 1857.

61. 12. 3. 2. Frontlet and horns. Algoa Bay.
Presented by C. Wemys, Esq., 1861.

81. 7. 27. 1. Frontlet and horns. Botlitli Valley, Mashonaland; collected by F. C. Selous, Esq. *Purchased*, 1881.

85. 6. 29. 1. Skin, mounted. Metri Butluka, north of Bamangwato, Mashonaland; same collector. *Purchased*, 1885.

85. 6. 29. 2. Skin, mounted, female. Koung Nara; same collector. *Same history.*

II. ORYX BEISA.

Antilope beisa, *Rüppell, Neue Wirbelth. Abyssin.* p. 14, pl. v, 1835; *Oken, Allgemeine Naturgeschichte*, vol. vii, p. 1392, 1838; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 617, 1841; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 477, 1844, vol. v, p. 436, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 123, pl. xxxviii, 1845; *Schinz, Synop. Mamm.* vol. ii, p. 436, 1845, *Mon. Antilop.* p. 33, pl. xxxvii, 1848; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 71, 1887.

Oryx beisa, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 207, 1846; *Gray, Proc. Zool. Soc.* 1850, p. 134, *Knowsley Menagerie*, p. 17, 1850, *Cat. Ungulata Brit. Mus.* p. 106, 1852, *Cat. Ruminants Brit. Mus.* p. 35, 1872, *Hand-List Ruminants Brit. Mus.* p. 104, 1873; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 17, 1863, *Reise Nordost-Afrika*, vol. ii, p. 111, 1877; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 178, 1869; *Blanford, Zool. Abyssinia*, p. 262, 1870; *Sclater, Proc. Zool. Soc.* 1872, p. 604, 1874, p. 323, 1875, p. 633, 1881, p. 626, pl. liv, 1892, p. 102; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 231, 1880; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 262, 1884; *Phillips, Proc. Zool. Soc.* 1885, p. 931; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 155, 1891; *Flower and Lydekker, Study of Mammals*, p. 343, 1891; *Thomas, Proc. Zool. Soc.* 1891, p. 207; *Swayne, ibid.* 1892, p. 300, *Seventeen Trips to Somaliland*, p. 298, 1895; *Ward, Records of Big Game*, p. 146, 1892, ed. 6, p. 293, 1910, ed. 7, p. 291, 1914; *Lydekker, Horns and Hoofs*, p. 247, 1903, *Great and Small Game of Africa*, p. 382, 1899, *Game Animals of Africa*, p. 284, 1908, *Cat. Hume Bequest Brit. Mus.* p. 42, 1913; *Matschie, Sitzber. Ges. nat. Freunde*, 1893, p. 103; *Rhoads, Proc. Ac. Philadelphia*, 1896, p. 519; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 131, 1896; *Elliot, Field Mus. Zool. Pub.* vol. i, p. 130, 1895, *Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 83, 1907; *A. H. Neumann, Elephant-Hunting in E. Africa*, p. 363, 1898; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 65, pl. lxxxiv, 1899; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 99; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Renshaw, Final Nat. Hist. Essays*, p. 128, 1904; *Powell-Cotton. Unknown Africa*, p. 574, 1904; *Gillett, Proc. Zool. Soc.* 1905, vol. i, p. 157; *Lortet and Gaillard, Arch. Mus. Lyon*, vol. x, p. 162, 1908; *Pocock, Proc. Zool. Soc.* 1910, p. 907; *Drake-Brockman, Mammals of Somali.* p. 89, 1910.

Oryx biessa, *Gray, Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 232, 1846.

BEISA.

Typical locality Red Sea littoral west of Massowa.

Size smaller than in last—shoulder-height about 26 inches—and horns shorter, general colour tawny; face-markings of the same kind of type, but the nose-patch narrower and not uniting with the shorter eye-stripes to girdle the muzzle; also less black on under side of lower jaw; no fringe or tuft on throat; dorsal stripe more distinct, extending nearly to middle of rump; flank-stripe narrower and not extending on to thighs; fore-legs with a black garter above knees and a streak on front of shanks; elsewhere white, as are practically the entire hind-legs. Good horns (other than those of *O. b. callotis*) measure from 35 to 39 inches in length, with a girth of from 5 to 7¼, and a tip-to-tip interval of from 7 to 13 inches.

The range extends from the African shore of the Red Sea in the neighbourhood of Suakin, southwards to Danakil, and thence through Somaliland to British and German East Africa as far as Kilimanjaro.

The following races have been distinguished:—

A. Ears not tufted; head-markings as above.
  a. Colour tawny; limbs white; flank-band relatively broad; head-markings as above ..... *O. beisa beisa.*
  b. Colour deeper and redder; legs suffused with reddish or brownish ..... *O. beisa gallarum.*
  c. Flank-band narrower; head-markings approximating to those of next race..... *O. beisa annectens.*
B. Ears tufted; black eye-stripe frequently continued downwards to lower jaw, and thence backwards to unite with throat-stripe ..... *O. beisa callotis.*

A.—Oryx beisa beisa.

Oryx beisa typica, *Ward, Records of Big Game*, ed. 6, p. 293, 1910, ed. 7, p. 292, 1914.

Typical locality Red Sea littoral west of Massowa.

Ears not tufted; general colour pure tawny; face-markings as described above; flank-band medium; legs more or less nearly pure white.

71. 11. 29. 7. Skin, mounted. Abyssinia.

Purchased (*Gerrard*), 1871.

79. 11. 12. 13. Skull, with horns. Juba Valley, Jubaland; collected by Sir John Kirk, G.C.M.G., K.C.B.
Purchased, 1879.

91. 7. 29. 1. Frontlet and horns. Somaliland.
Presented by W. F. Sinclair, Esq., 1891.

91. 12. 3. 1. Skull, with horns. Bondap Range, Somaliland. *Presented by Gen. Sir A. H. Paget, G.C.B.*, 1891.

91. 12. 3. 2. Skull, with horns. Same locality.
Same history.

93. 6. 30. 3. Skin, mounted. Shebeli Valley, Somaliland.
Same donor, 1893.

94. 2. 21. 3–4. Two skulls, with horns, and skins, female. Haud Plateau, Somaliland; collected by Lieut.-Col. H. G. C. Swayne. *Presented by Dr. P. L. Sclater*, 1894.

1. 7. 6. 15. Skull, with horns, and head-skin. Danakil, east of Hawash, Abyssinia.
Presented by Sir A. E. Pease, Bart., 1901.

98. 7. 2. 16. Skull, with horns, and head-skin. N. E. Africa. *Presented by H. Andrew, Esq.*, 1898.

4. 7. 2. 9. Head, mounted. Same locality.
Bequeathed by H. Andrew, Esq., 1904.

7. 12. 12. 4-5. Two skulls, with horns. Southern Abyssinia. *Presented by J. Rowland Ward, Esq.*, 1907.

6. 5. 4. 13. Skin. Khansa Mt., near Odwein Wells, Somaliland. *Presented by Dr. R. E. Drake-Brockman*, 1906.

6. 5. 4. 16. Skin, female. Guban, 25 miles east of Berbera. *Same history.*

12. 10. 31. 90–93. Four frontlets, with horns. Somaliland. *Bequeathed by A. O. Hume, Esq., C.B.*, 1912.

13. 8. 2. 6. Skull, with horns, and head-skin. José, central south Jubaland.
Presented by I. N. Dracopoli, Esq., 1913.

B.—Oryx beisa gallarum.

Oryx beisa gallarum, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 99; *Lydekker, Game Animals of Africa*, p. 284, 1908; *Ward, Records of Big Game*, ed. 6, p. 293, 1910; *Hollister, Smithson. Misc. Collect.* vol. lvi, no. 2, p. 8, 1910.

Typical locality Orte Balinga, Modjo, southern Ennia-Gallaland.

Type apparently in collection of describer.

Distinguished from typical race by deeper and redder general colour, and the presence of a reddish or brownish wash on limbs. The hoofs are also stated to be larger, and there may be a slight difference in the horns.

No specimen in the collection.

C.—Oryx beisa annectens.

Oryx annectens, *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 7, 1910.

Oryx beisa annectens, *Ward*, *Records of Big Game*, ed. 6, p. 293, 1910; *Roosevelt*, *African Game Trails*, p. 487, 1910; *Lydekker*, *Game Animals of Africa*, *Suppl.* p. 14, 1911; *Lönnberg*, *K. Svenska Vet.-Ak. Handl.* vol. xlviii, no. 5, p. 173, 1912.

Typical locality Laikipia Plateau, B. E. Africa.

Type in U.S. National Museum.

Distinguished from typical race by the narrower dark flank-stripe and the approximation of the head-markings to those of the next race, as well as by the larger upper molars; skull small and narrow in front of orbits, with the tips of the premaxillæ truncated.

10. 1. 13. 2. Head-skin, provisionally identified with this race. Kedong Valley, B. E. Africa.

Presented by Major G. E. Tuson, 1910.

D.—Oryx beisa callotis.

Oryx beisa, *Hunter*, *Willoughby's Big Game of E. Africa*, p. 289.

Oryx callotis, *Thomas*, *Proc. Zool. Soc.* 1892, p. 195, pl. xv; *Ward*, *Records of Big Game*, p. 149, 1892; *True*, *Proc. U.S. Nat. Mus.* vol. xv, p. 470, pl. lxxxvi, 1892; *Lydekker*, *Horns and Hoofs*, p. 248, 1893, *Great and Small Game of Africa*, p. 382, 1908; *Lugard*, *E. Africa*, vol. i, p. 534, 1893; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1893, p. 103, *Säugethiere Deutsch-Ostafrika*, p. 135, 1895; *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 293, 1894, *Proc. Zool. Soc.* 1897, p. 454; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, p. 131, 1896; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 73, 1899; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1900, p. 561, 1902, p. 100; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 8, 1910.

Oryx beisa callotis, *Lydekker*, *Game Animals of Africa*, p. 285, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 293, 1910, ed. 7, p. 293, 1914.

Typical locality Kilimanjaro district, German East Africa.

General colour richer and ruddier than in the typical beisa;

black eye-stripe frequently continued downwards to the lower jaw and thence backwards to join the throat-stripe; frontal patch and nose-patch sometimes isolated, in other cases united by a narrow line, as in typical race; no black on front of shanks of fore-legs; ears surmounted by long tufts of black hair; dorsal hair-whorl a little behind middle of back, instead of on rump; skull broad in front of orbits, with tips of premaxillæ pointed, and molars very large; horns relatively short. Good horns measure from 30 to 33½ inches in length, with a girth of from 5¾ to 5⅞, and a tip-to-tip interval ranging from 6 to 14½ inches.

The range includes British East Africa south of the Tana, and the interior of German East Africa.

92. 3. 19. 4. Head, mounted. Kilimanjaro district. Type. *Presented by J. Rowland Ward, Esq.*, 1892.

2. 8. 14. 1. Skull, with horns, and head-skin. Athi Plains, B. E. Africa. *Presented by Mrs. Bellew*, 1902.

2. 8. 14. 2. Skull, with horns, and head-skin, female. Same locality. *Same history.*

III. ORYX ALGAZEL.

Antilope gazella, *Pallas, Spicil. Zool.* fasc. xii, p. 17, 1777; *Kerr, Linn.'s Anim. Kingdom*, p. 316, 1792; *Daudin, Lacépède's Buffon*, vol. xiv, p. 182, 1799; *Bechstein, Uebersicht vierfüss. Thiere*, vol. ii, p. 642, 1800; *Desmarest, Nouv. Dict. Hist. Nat.* vol. xxiv, Tabl. p. 32, 1804, *Mammalogie*, vol. ii, p. 475, 1822; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1182, 1819; *Schinz, Cuvier's Thierreich*, vol. i, p. 394, 1821; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 444, 1822; *Savi, Isis*, 1832, p. 499; *Rüppell, Neue Wirbelth. Abyssin.* p. 16, 1835; *Oken, Allgemeine Naturgeschichte*, vol. vii, p. 1396, 1838; *F. Cuvier, Hist. Nat. Mamm., Index*, p. 5, 1842; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 481, 1844; *Schinz, Synop. Mamm.* vol. ii, p. 437, 1845; *Giebel, Säugethiere*, p. 295, 1853–1855; *nec* Capra gazella, *Linn.*

Cerophorus (Oryx) gazella, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Cemas algazel, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 741, 1816, partim, ex "Algazel," *Buffon, Hist. Nat.* vol. xii, pp. 211 and 272, pls. xxxiii, figs. 1 and 2, 1764.

Antilope tao, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 189, vol. v, p. 327, 1827; *A. Smith, S. African Quart. Journ.* vol. ii, p. 187, 1834; *Schinz, Synop. Mamm.* vol. ii, p. 425, 1845.

Antilope (Oryx) bezoastica, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 191, vol. v, p. 327, 1827, *misprint for* bezoartica; nec *Pallas.*

Antilope leucoryx, *Lichtenstein, Darstellung. Säugeth.* pl. i, 1827; *Hemprich and Ehrenberg, Symbol. Phys., Decas* ii, pl. iii, 1828; *J. B. Fischer, Synop. Mamm.* p. 478, 1829; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 41, 1838; *Oken, Allgemeine Naturgeschichte*, vol. vii, p. 1394, 1838; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 618, 1841; *Reichenbach, Säugethiere*, vol. iii, p. 120, pl. xxxviii, 1845; *Schinz, Synop. Mamm.* vol. ii, p. 434, 1845, *Mon. Antilop.* p. 32, pl. xxxvi, 1848; nec *Pallas.*

Antilope ensicornis, *Hemprich and Ehrenberg, Symbol. Phys.* vol. i, p. 1, 1832, as a race of A. leucoryx.

Antilope algazella, *Rüppell, Neue Wirbelth. Abyssin.* p. 26, 1835.

Antilope bezoartria, *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 203, pl. xxiv, 1835.

Oryx leucoryx, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1842, p. 201, 1843, 1844, p. 206, 1846; *Gray, List. Mamm. Brit. Mus.* p. 156, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 232, 1846, *Proc. Zool. Soc.* 1850, p. 134, *Knowsley Menagerie*, p. 17, 1850, *Cat. Ungulata Brit. Mus.* p. 107, 1852, *Cat. Ruminants Brit. Mus.* p. 36, 1872, *Hand-List Ruminants Brit. Mus.* p. 104, 1873; *Barth. Reisen Nord-u. Central-Afrika*, vol. i, p. 589, 1857; *Wolf, Zoological Sketches*, vol. i, pl. xxiii, 1861, vol. ii, pl. xix, 1868; *Sclater, Proc. Zool. Soc.* 1863, p. 230, 1873, p. 604; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 177, 1869; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 231, 1880; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 261, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 135, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 166, 1892; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 156, 1891; *Flower and Lydekker, Study of Mammals*, p. 344, 1891; *Ward, Records of Big Game*, p. 148, 1892, ed. 6, p. 298, 1910; *Lydekker, Horns and Hoofs*, p. 249, 1893, *Great and Small Game of Africa*, p. 382, 1899, *Game Animals of Africa*, p. 288, 1908; *Matschie, Sitzber. Ges. nat. Freunde*, 1893, p. 104; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 131, 1896; *Johnston, Proc. Zool. Soc.* 1898, p. 352; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 43, pl. lxxxi, 1899; *Anderson and de Winton, Zool. Egypt, Mamm.* p. 352, 1902; *Renshaw, Final Nat. Hist. Essays*, p. 144, 1907; *Lortet and Gaillard, Arch. Mus. Lyon*, vol. x, p. 160, 1908; *Gaillard, Rev. Ethnogr. et Sociol.* 1912, nos. 11 and 12, p. 12.

Antilope bezoartica, *Reichenbach, Säugethiere*, vol. iii, p. 120, pl. xxxvii, 1845.

Antilope ensicornis, *var.* nubica *and* senegalensis, *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 479, 1844, vol. v, p. 437, 1855.

Oryx bezoarticus, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 178, 1869.

Oryx algazel, *Thomas, Proc. Zool. Soc.* 1903, vol. ii, p. 300; *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 83, 1907; *Pocock, Proc. Zool. Soc.* 1910, p. 909; *Ward's Records of Big Game*, ed. 7, p. 296, 1914.

ORYX, or WHITE ORYX.

Typical locality Western Sahara.

Size medium—shoulder-height about 40 inches. Horns

bending backwards in a bold sabre-like sweep; general colour yellowish or reddish white, frequently with more or fewer blotches of pale brown; neck and shoulders above upper part of legs bright chestnut, that tint being continued as a dorsal stripe, and also forming a wash on hind-quarters and root of tail; head whitish, with a greyish brown patch on nose and another on forehead, connected by an ill-defined brownish line, and also an eye-stripe; hind part of cheeks coloured like neck; ears dirty white; a faint flank-stripe rather darker than back; mane brown; legs whitish, with a suffusion of brown in front spreading downwards from shoulders and thighs; dorsal hairs reversed from rump; tail-tuft black. Basal length of skull about 13 inches. Fine horns measure from 39 to 45 inches in length, with a basal girth of from $4\frac{7}{8}$ to $7\frac{1}{8}$, and a tip-to-tip interval of from $8\frac{1}{2}$ to $16\frac{1}{2}$ inches.

The range includes the desert regions of northern Africa extending as far south as Senegambia and some distance north of Khartum, but not comprising Syria.

A.—Oryx algazel algazel.

The typical western form of the species.

Typical locality Western Sudan.

Of the undermentioned species, some of those with no definite locality may be referable to the eastern form.

638, *a*. Skull, imperfect, with horns. North Africa.
Old collection—no history.

638, *b* and *c*. Two single horns; the former not forthcoming. North Africa. *No history.*

638, *e*. Pair of horns. North Africa. *No history.*

638, e^1. Skeleton, mounted. North Africa.
Purchased (*Zoological Society*).

0. 3. 24. 1. Single horn. Sokoto, Nigeria; collected by E. B. Macnaughten, Esq.
Presented by J. Rowland Ward, Esq., 1900.

B.—Oryx algazel dammah.

Antilope dammah, *Cretzschmar, Rüppell's Reise nordl. Afrika, Atlas*, p. 22, 1826; *Rüppell, J. B. Fischer's Synop. Mamm.* p. 475, 1829.

Oryx algazel dammah, *Thomas, Proc. Zool. Soc.* 1903, vol. i, p. 300.

Typical locality probably Kordofan, E. Sudan.

Thomas assumes the eastern representative of the species to be racially distinct from the typical western form, but no evidence appears to be forthcoming to show whether this is really the case.

46. 6. 25. 63. Skin, and skull and horns. Sennar; collected by Parreys. *Purchased*, 1846.

3. 2. 8. 39. Skin, mounted, and skull. Kordofan. Noticed by Thomas, *loc. cit.*

Presented by Major H. N. Dunn, 1903.

IV. ORYX LEUCORYX.

Gazella Indicæ cornu singulare, *Pallas, Nov. Comm. Ac. Petrop.* vol. xiii, p. 470, pl. x, fig. 5, 1769.

Antilope leucoryx, *Pallas, Spicil. Zool.* vol. xii, p. 17, 1777; *Hermann, Tabl. Affin. Anim.* p. 108, 1783; *Zimmermann, Geogr. Geschichte*, vol. ii, p. 108, 1780, vol. iii, p. 269, 1783; *Schreber, Säugthiere*, pl. cclvi *B*, 1784; *Boddaert, Elenchus Anim.* p. 139, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 190, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 317, 1792; *Donndorff, Zool. Beyträge*, vol. i, p. 639, 1792; *Link, Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Bechstein, Uebersicht vierfüss. Thiere*, vol. ii, p. 641, 1800; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 359, 1801; *Turton, Linn.'s Syst. Nat.* vol. i, p. 115, 1806; *Desmarest, Nouv. Dict. Hist. Nat.* vol. xvii, p. 132, 1803, vol. xxiv, tabl. p. 32, 1804, *Mammalogie*, vol. ii, p. 474, 1822; *Cuvier, Dict. Sci. Nat.* vol. ii, p. 237, 1804, *Règne Anim.* vol. i, p. 262, 1817; *Tiedemann, Zoologie*, vol. 1, p. 408, 1808; *Thunberg, Mém. Ac. Sci. St. Pétersb.* vol. iii, p. 313, 1811; *G. Fischer, Zoognosia*, vol. iii, p. 425, 1814; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 219, 1815; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1180, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 391, 1821; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 444, 1822; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 186, vol. v, p. 326, 1827; *Rüppell, Neue Wirbelth. Abyssin.* p. 16, 1835; *Pearson, Journ. Asiat. Soc. Bengal*, vol. ix, p. 519, 1840.

Antilope (Bubalis) oryx, *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 156, 1814.

Cemas oryx, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 734, 1816.

Cerophorus (Oryx) leucoryx, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Oryx leucoryx, *Jardine*, *Naturalist's Libr.*, *Mamm.* vol. iii, p. 204, 1835; *Thomas*, *Proc. Zool. Soc.* 1903, vol. i, p. 300; *Pocock*, *ibid.* 1910, p. 908; *Ward's Records of Big Game*, ed. 7, p. 293, 1914.

Antilope ensicornis *var.* asiatica, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. v, p. 437, 1855.

Oryx leucoryx pallasi, *Fitzinger*. *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 178, 1869.

Oryx beatrix, *Gray*, *Proc. Zool. Soc.* 1857, p. 157, pl. lv, *Cat. Ruminants Brit. Mus.* p. 36, 1872, *Hand-List Ruminants Brit. Mus.* p. 112, 1873; *Sclater*, *Proc. Zool. Soc.* 1872, p. 603, 1881, p. 819; *St. John*, *ibid.* 1874, p. 95; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 156, 1891; *Flower and Lydekker*, *Study of Mammals*, p. 344, 1891; *Ward*, *Records of Big Game*, p. 148, 1892, ed. 6, p. 298, 1910; *Lydekker*, *Horns and Hoofs*, p. 249, 1893, *Great and Small Game of Europe*, *etc.* p. 204, 1901; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1893, p. 104; *Thomas*, *Proc. Zool. Soc.* 1894, p. 541; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, p. 131, 1896; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 51, pl. lxxxii, 1899; *Renshaw*, *Final Nat. Hist. Essays*, p. 136, 1907; *Carruthers*, *Field*, vol. cxiv, p. 122, 1909.

Antilope beatrix, *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. ix, p. 61, 1887.

Beatrix, or Arabian, Oryx.

Typical locality probably Arabia.

The smallest member of the group; shoulder-height about 35 inches. Horns nearly straight, relatively long; general colour dirty white, slightly darker on haunches; face with a frontal and a nasal brown patch, which may be united by a narrow line, and a similarly coloured eye-stripe expanding below to form, with its fellow and a throat-stripe, a patch on lower jaw, and continued as a line down throat as far as chest, which is also brown; ears, mane, and tail (except black tuft) whitish. Legs, from shoulders and thighs to pasterns (which are white), deep brown; a faint brownish flank-stripe; hair of back reversed from rump. Horns measure from 22 to 27¼ inches in length, with a basal girth of from 4 to 5, and a tip-to-tip interval of from 9¼ to 12½ inches.

The range extends from Southern Arabia to Mesopotamia.

57. 6. 26. 1. Skull, with horns, and skin. From an animal presented by Capt. J. Sheppard to the Zoological

Society, and probably obtained from the shores of the Persian Gulf. Type of *O. beatrix*.

Purchased (*Zoological Society*), 1857.

72. 11. 18. 1. Skin, mounted, and skeleton. From an animal obtained by Col. Pelly, then British Resident at Bushire, Persian Gulf, and presented by J. Gwyn Jeffreys, Esq., to the Zoological Society.

Purchased (*Zoological Society*), 1872.

90. 12. 20. 1. Skeleton, with horns, immature female. Head of Persian Gulf; collected by B. T. Ffinch, Esq.

Purchased, 1890.

94. 3. 9. 10. Skull, with horns, and skin, immature female. Adam, Oman, S. Arabia.

Presented by Lieut.-Col. A. S. G. Jayakar, 1894.

97. 1. 14. 10. Skeleton, horns, and skin. Same locality.

Same donor, 1897.

7. 10. 23. 1. Skin, mounted. Mesopotamian Desert.

Presented by P. B. Vander Byl, Esq., 1907.

II. Genus HIPPOTRAGUS.

Egocerus, *Desmarest*, *Mammalogie*, vol. ii, p. 475, 1822, nec Ægoceros, *Pallas*.

Aigocerus, *Hamilton Smith*, *Griffith's Animal Kingdom*, vol. v, p. 324, 1827, nec Ægoceros, *Pallas*.

Ozanna, *Reichenbach*, *Säugethiere*, vol. iii, p. 126, 1845.

Hippotragus, *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1844, p. 196, 1846; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 3, 1899; *Pocock*, *Proc. Zool. Soc.* 1910, p. 909.

Size large; general form taller and more slender than in preceding genus. Horns medium or very long, heavily ridged, cylindrical or compressed, and rising nearly vertically above eye-sockets, so as to form an obtuse angle with plane of face, after which they sweep backwards in a bold, scimetar-like curve, with a comparatively slight but regular divergence; glandular tufts of white hairs below eyes. Skull closely resembling that of *Oryx* in general characters, but the lachrymal fissures frequently obliterated.

The range comprises the greater portion of Ethiopian Africa, exclusive of the equatorial forest-zone.

The three species are distinguishable as follows:—

A. No dark face-markings ..... *H. leucophæus.*

B. Face with dark markings.

a. General colour greyish or rufous brown ..... *H. equinus.*

b. General colour black ..... *H. niger.*

I. HIPPOTRAGUS LEUCOPHÆUS.

Blue Antelope, *Pennant*, *Quadrupeds*, p. 66, 1781.

La Gazelle Tzeiran, *Buffon*, *Nat. Hist.* vol. vi, p. 168, pl. xx, 1782.

Antilope leucophæa, *Pallas*, *Misc. Zool.* p. 4, 1766, *Spicil. Zool.* fasc. i, p. 6, 1767, fasc. xii, p. 12, 1777; *Erxleben*, *Syst. Regn. Anim.* p. 271, 1777; *Zimmermann*, *Spec. Zool. Geogr.* p. 545, 1777, *Geogr. Geschichte*, vol. ii, p. 106, 1780; *Gatterer*, *Brev. Zool.* vol. i, p. 78, 1780; *Schreber*, *Säugthiere*, pl. cclxxviii, 1784; *Boddaert*, *Elenchus Anim.* p. 139, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 182, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 306, 1792; *Donndorff*, *Zool. Beyträge*, p. 609, 1792; *Link*, *Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Daudin*, *Lacépède's Buffon*, vol. xiv, p. 183, 1799; *Bechstein*, *Uebersicht vierfüss. Thiere*, vol. ii, p. 641, 1800; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 355, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 111, 1802; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxiv, Tabl. p. 52, 1804; *Cuvier*, *Dict. Sci. Nat.* vol. ii, p. 204, 1804, *Règne Anim.* vol. i, p. 262, 1817; *Tiedemann*, *Zoologie*, vol. i, p. 408, 1808; *Thunberg*, *Mém. Ac. Sci. St. Pétersb.* vol. iii, p. 313, 1811; *Lichtenstein*, *Reise*, vol. i, p. 265, vol. ii, p. 121, 1811–12; *G. Fischer*, *Zoognosia*, vol. iii, p. 416, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 219, 1815; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1183, 1818; *Gray*, *Med. Repos.* vol. xv, p. 307, 1821; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 394, 1821, *Synop. Mamm.* vol. ii, p. 440, 1845; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 446, 1822; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 176, vol. v, p. 324, 1827; *Lesson*, *Man. Mamm.* p. 386, 1827; *J. B. Fischer*, *Synop. Mamm.* p. 479, 1829; *Smuts*, *Enum. Mamm. Cap.* p. 68, 1832; *Owen*, *Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 634, 1868; *Oken*, *Allgemeine Naturgesch.* vol. vii, p. 1396, 1838; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 618, 1841; *Temminck*, *Esquiss. Zool. Guiné*, p. 192, 1853; *Giebel*, *Säugethiere*, p. 295, 1853–55.

Antilope capensis, *Müller*, *Natursyst.*, *Suppl.* p. 52, 1776.

Capra leucophæa, *Thunberg*, *Resa*, vol. ii, p. 127, 1789, Engl. trans. vol. ii, p. 113, 1793.

Antilope (Bubalis) leucophæa, *Lichtenstein*, *Mag. nat. Freunde*, vol. vi, p. 159, 1814.

Cerophorus (Oryx) leucophæus, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Cemas glaucus, *Oken*, *Lehrbuch Naturgeschichte*, vol. iii, *Zool.* p. 740, 1816.

Antilope (Egocerus) leucophæus, *Desmarest*, *Mammalogie*, vol. ii, p. 475, 1822.

Antilope (Aigocerus) leucophæus, *H. Smith*, *Griffith's Animal Kingdom*, vol. v, p. 324, 1877.

Aigocerus leucophæus, *A. Smith*, *S. African Quart. Journ.* vol. ii, p. 185, 1834; *Gray*, *Knowsley Menagerie*, p. 16, 1850; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 177, 1869; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 483, 1887; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 135, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 166, 1892.

Antilope glauca, *Forster*, *Descrip. Anim.* p. 391, 1844.

Hippotragus leucophæus, *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1844, p. 197, 1846; *Kohl*, *Ann. Hofmus. Wien*, vol. i, p. 83, 1886; *Bryden*, *Kloof and Karroo*, p. 290, 1899, *Great and Small Game of Africa*, p. 417, 1899; *Flower and Lydekker*, *Study of Mammals*, p. 343, 1891; *Lydekker*, *Horns and Hoofs*, p. 245, 1893, *Great and Small Game of Africa*, p. 397, 1899, *Game Animals of Africa*, p. 301, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 5, pl. lxxvi, 1899; *W. L. Sclater*, *Fauna S. Africa*, *Mamm.* vol. i, p. 215, 1900; *Rothschild*, *Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Renshaw*, *Zoologist*, ser. 4, vol. v, p. 441, pl. iii, 1901, *Nat. Hist. Essays*, p. 39, 1904.

Blaauwbok.

Typical locality, Swellendam district, Cape Colony, to which the species appears to have been restricted. Exterminated about 1799 or 1800.

Type of *Egocerus*, *Aigocerus*, and *Hippotragus*.

Type in Leyden Museum.

Smallest of the group, the shoulder-height being about 45 inches in males and 40 in females. Horns relatively short; general colour bluish grey, with the forehead rufous brown, and upper lip and a tuft in front of eyes lighter than general colour; ears relatively short, not tufted; mane short, inclined forwards; throat-fringe almost wanting; underparts dirty white; shanks with an inconspicuous dark line in front; tail-tuft greyish. In the type specimen the horns measure $24\frac{2}{5}$ inches in length; those of the Paris example carry 28 ridges.

636, *e*. Frontlet and horns, provisionally referred to this species. South Africa. Figured in *The Book of Antelopes*, vol. iv, p. 11, fig. 8. *Old collection—no history.*

II. HIPPOTRAGUS EQUINUS.

Antilope equina, *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. xxiv, p. 4, and Tabl. p. 32, 1864, *Mammalogie*, vol. ii, p. 476, 1822; *Cuvier*, *Règne Anim.* vol. i, p. 263, 1817; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 394, 1821, *Synop. Mamm.* vol. ii, p. 441, 1845, *Mon. Antilop.* p. 37, pl. xlii, 1848; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 446, 1822; *Burchell*, *List Quadrupeds presented to Brit. Mus.* p. 8, 1825; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 177, vol. v, p. 324, 1827; *Lesson*, *Man. Mamm.* p. 387, 1827; *J. B. Fischer*, *Synop. Mamm.* p. 480, 1829; *Smuts*, *Enum. Mamm. Cap.* p. 69, 1832; *Owen*, *Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 38, 1868; *Goldfuss*, *Schreber's Säugthiere*, vol. iv, p. 1186, 1836; *A. Smith*, *Cat. S. African Mus.* p. 11, 1837; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 618, 1841; *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 492, 1844, vol. v, p. 435, 1855.

Capra æthiopica, *Schinz*, *Cuvier's Thierreich*, vol. i, p. 402, 1812, based on the "Tackhaitse" of *Daniell's African Scenery*, no. 24, 1804–8.

Capra jubata, *Goldfuss*, *Schreber's Säugthiere*, vol. v, pl. cclxxxvii, *C.* 1824.

Antilope barbata, *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 180, vol. v, p. 325, 1827; *Smuts*, *Enum. Mamm. Cap.* p. 70, 1832; *Jardine*, *Naturalist's Libr.*, *Mamm.* vol. iii, p. 199, pl. xxiii, 1835; *Owen*, *Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 364, 1868.

Antilope aurita, *Burchell*, *H. Smith*, *op. cit.* vol. v, p. 325, 1827.

Antilope truteri, *J. B. Fischer*, *Synop. Mamm.* p. 478, 1829.

Aigoceros barbata, *A. Smith*, *S. African Quart. Journ.* vol. ii, p. 186, 1834.

Aigoceros equinus, *A. Smith*, *op. cit.* p. 185, 1834; *Harris*, *Wild Sports S. Africa*, p. 379, 1839, *Portraits Wild Anim. S. Africa*, p. 92, pl. xviii, 1840; *A. Smith*, *Illustr. Zool. S. Africa*, pl. xxvii, 1840; *Gray*, *Proc. Zool. Soc.* 1850, p. 132, *Knowsley Menagerie*, p. 16, 1850; *Blyth*, *Cat. Mamm. Asiat. Soc. Bengal*, p. 169, 1863; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 177, 1869; *Jentink*, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 166, 1892.

Ægoceros leucophæus, *Gray*, *List Mamm. Brit. Mus.* p. 158, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 232, 1846, *List Osteol. Brit. Mus.* pp. 58 and 145, 1847, *Cat. Ungulata Brit. Mus.* p. 102, 1852, *Cat. Ruminants Brit. Mus.* p. 34, 1872, *Hand-List Ruminants Brit. Mus.* p. 103, 1873; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 239, 1862; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 135, 1887, *Notes Leyden Mus.* vol. ix, p. 173, 1887, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 166, 1892; *nec* Antilope leucophæa, *Pallas*.

Hippotragus equinus, *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1844, p. 197, 1846; *Sclater*, *Proc. Zool. Soc.* 1868, p. 217, 1893, p. 728; *Buckley*, *ibid.* 1876, p. 288; *Flower and Garson*, *Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 262, 1884; *Kohl. Ann. Hofmus. Wien*, vol. i, p. 85, 1886; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.*

pt. ii, p. 156, 1891, *Fauna S. Africa, Mamm.* vol. i, p. 217, 1900; *Flower and Lydekker, Study of Mammals*, p. 343, 1891; *Nicolls and Eglington, Sportsman in S. Africa*, p. 51, 1892; *Lydekker, Horns and Hoofs*, p. 243, 1893, *Great and Small Game of Africa*, p. 397, 1899, *Game Animals of Africa*, p. 295, 1908; *Lorenz, Ann. Hofmus. Wien*, vol. ix, *Notizen*, p. 62, 1894; *Rendall, Proc. Zool. Soc.* 1895, p. 362; *Millais, A Breath from the Veldt*, p. 127, 1896; *Ward, Records of Big Game*, ed. 2, p. 181, 1896, ed. 6, p. 286, 1910, ed. 7, p. 285, 1914; *Kirby, Haunts of Wild Game*, p. 548, 1896; *Johnston, British Central Africa*, p. 318, 1897; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 13, pls. lxxvii and lxxviii, 1899; *Selous, Great and Small Game of Africa*, p. 406, 1899; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Renshaw, Nat. Hist. Essays*, p. 60, 1904; *Alexander, From Niger to Nile*, p. 393, 1907; *Pocock, Proc. Zool. Soc.* 1910, p. 910; *Letcher, Big Game N. E. Rhodesia*, p. 210, 1911; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Hippotragus leucophæus, *Brehm, Thierleben, Säugeth.* vol. iii, p. 226, 1880; *Selous, Proc. Zool. Soc.* 1881, p. 755, *A Hunter's Wanderings in S. Africa*, p. 213, 1881; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 262, 1884; *Bocage, J. Sci. Lisboa*, ser. 2, vol. ii, p. 26, 1890; *Ward, Records of Big Game*, p. 140, 1892; *nec* Antilope leucophæa, *Pallas*.

Egocerus equinus, *Thomas, Proc. Zool. Soc.* 1904, vol. i, p. 464; *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 266, 1913.

Ozanna equina, *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 82, 1907.

ROAN ANTELOPE, or BASTARD GEMSBOK.

Typical locality South Africa north of the Orange River.

Size very large, the shoulder-height in some cases being from about 56 to 60 inches, or even more. Horns stout, comparatively short, and cylindrical; general colour greyish or sandy roan; forehead and sides of face black (with or without a patch of chestnut at base of horns); a prominent patch below eyes—in the lower half of which the hairs are elongated into a tuft—and a less conspicuous one behind eyes,* together with muzzle, lips, and under-parts, white; ears long, narrow, and pointed, with black pencils of hair at tips; a brown mane, directed mainly backwards, but showing a tendency to be whorled at withers, and a long throat-fringe; limbs brownish fawn, occasionally with black patches on shoulders and upper part of fore-legs; tail reaching nearly to hocks, with black tuft. Average basal length of skull about 16 inches, maximum breadth $6\frac{3}{4}$, interval between muzzle

* Very frequently this patch is not surrounded by black, but in contact posteriorly with the general body-colour.

and orbit 10¼ inches. Young animals are uniformly rufous, without any black and white face-markings.

The range is nearly co-extensive with that of the genus, although not including the southern districts of Cape Colony.

The following races have been named:—

A. Ears moderate.

a. General colour greyish roan; forehead wholly black in both sexes ..... *H. e. equinus.*

b. General colour pale rufous; a patch of chestnut at base of front of horns in both sexes ..... *H. e. langheldi.*

B. Ears longer.

General colour browner. Upper part of forehead black in males, chestnut in females..... *H. e. bakeri.*

C. Ears still longer; general colour more fulvous; upper part of forehead chestnut in both sexes.

a. Size smaller ..... *H. e. gambianus.*

b. Size larger ..... *H. e. scharicus.*

A.—Hippotragus equinus equinus.

Hippotragus equinus typicus, *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 13, 1899; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Ward, Records of Big Game*, ed. 6, p. 287, 1910, ed. 7, p. 285, 1914.

Typical locality S. Africa north of the Orange River.

General colour greyish roan; forehead black in both sexes right up to base of horns; ears relatively short. Fine horns measure from 30 to 34 inches in length (two specimens respectively of 35 and 39¼ are on record), with a girth of from 8¾ to 10½, and a tip-to-tip interval of from 5 to 13½ inches.

The range apparently extends as far north as Angola and Northern Rhodesia.

636, *a*. Frontlet and horns. Little Klibbolikbonni Spring, source of the Kruman River, lat. 27° 20′ S.
Presented by Dr. W. J. Burchell, about 1817.

636, *d*. Pair of horns. S. Africa. *Same history.*

636, *e*. Frontlet and horns, female. S. Africa.
Same history.

636, *g*. Pair of horns. Cape Colony; collected by Sir Andrew Smith. *Purchased* (*Argent*), *about* 1842.

42. 4. 11. 9. Skull, with horns, and skin. S. Africa; collected by Sir Andrew Smith, probably in Western Transvaal. *Purchased* (*Warwick*), 1842.

42. 12. 6. 13. Skin, mounted, and skull, female. S. Africa; collected by Burke.

Presented by the Earl of Derby, 1842.

83. 7. 28. 5. Skin, mounted. Gwenia Valley, Mashonaland; collected by F. C. Selous, Esq. *Purchased*, 1883.

84. 8. 1. 3. Skin, mounted, young. Manyamé Valley, Mashonaland; same collector. *Purchased*, 1884.

86. 5. 5. 9. Skeleton, with horns, mounted. Same locality and collector. *Purchased*, 1886.

93. 7. 25. 2. Skull, with horns, and skin, female. Near Lake Mweru, N. W. Rhodesia; collected by R. Crawshay, Esq.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1893.

99. 6. 29. 6. Skull, with horns, and skin. Zomba, Nyasaland.

Presented by Sir Alfred Sharpe, K.C.M.G., C.B., 1899.

99. 6. 29. 7. Skull, with horns, and skin, female. Same locality. *Same history.*

7. 10. 25. 9. Frontlet and horns. Portuguese East Africa.

Presented by F. Vaughan Kirby, Esq., 1907.

9. 6. 26. 2. Head-skin. Zomba; collected by Sir A. Sharpe. *Presented by J. Rowland Ward, Esq.*, 1909.

9. 6. 26. 3. Head-skin, female. Same locality and collector. *Same history.*

B.—Hippotragus equinus langheldi.

Ægoceros leucophæus, *Sclater*, *Proc. Zool. Soc.* 1864, p. 103, *nec* Antilope leucophæa, *Pallas*.

Hippotragus bakeri, *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 292, 1894, *Proc. Zool. Soc.* 1897, p. 454; *Matschie*, *Säugeth. Deutsch-Ostafrika*, p. 134, 1895; nec *Heuglin*.

Hippotragus equinus, *de Winton*, *Proc. Zool. Soc.* 1898, p. 127.

Hippotragus langheldi, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1898, p. 181; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 228, 1900.

Hippotragus rufopallidus, *O. Neumann*, *Proc. Zool. Soc.* 1898, p. 851 (1899).

Hippotragus equinus rufopallidus, *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 14, 1899; *Ward*, *Records of Big Game*, ed. 6, p. 289, 1910.

Hippotragus equinus langheldi, *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Lydekker, Game Animals of Africa*, p. 269, 1908; *Ward's Records of Big Game*, ed. 7, p. 287, 1914.

Egocerus equinus langheldi, *Thomas, Proc. Zool. Soc.* 1904, vol. i, p. 464.

Ozanna equinus langheldi, *Roosevelt, African Game Trails*, p. 486, 1910.

Typical locality Tabora, German East Africa.

Type in Berlin Museum.

General colour pale rufous roan; forehead chestnut in both sexes at base of horns; ears relatively short. Horns measure from 27 to 33 inches in length, with a basal girth of from 8½ to 9½, and a tip-to-tip interval of from 9½ to 17½ inches.

98. 1. 5. 16. Two skulls, with horns, and head-skins, immature. Machakos, B. E. Africa. The extent of black on the face is small, thus leaving the light patch behind the eye confluent posteriorly with the general colour. Noticed by de Winton, *op. cit.* *Presented by S. L. Hinde, Esq.*, 1898.

8. 2. 14. 12. Skull, with horns, immature. M'pelelé, S. Angoniland. *Presented by C. B. C. Storey, Esq.*, 1908.

8. 2. 14. 13. Skull, with horns, female. East of Nyika Plateau, B. E. Africa. *Same history.*

5. 4. 13. 15. Skin. S. W. Ankoli, Uganda; collected by Mr. W. G. Doggett. Noticed by Thomas, *op. cit.* *Presented by Lieut.-Col. C. Delmé-Radcliffe*, 1905.

5. 4. 13. 18. Skull, with horns. Same locality and collector. *Same history.*

5. 4. 13. 16–17. Two head-skins, female. Same locality and collector. *Same history.*

C.—Hippotragus equinus bakeri.

Hippotragus bakeri, *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 16, pl. ii, fig. 6, 1863, *Reise Nordost-Afrika*, vol. ii, p. 110, 1877; *Baker, Nile Tributaries of Abyssinia*, pp. 475 and 545, 1867; *Sclater, Proc. Zool. Soc.* 1868, p. 214, pl. xvi; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 66, 1887; *Flower and Lydekker, Study of Mammals*, p. 343, 1891; *Ward, Records of Big Game*, p. 142, 1892; *Lydekker, Horns and Hoofs*, p. 246, 1893.

Ægoceros bakeri, *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 177, 1869; *Gray, Cat. Ruminants Brit. Mus.* p. 34, 1872.

Hippotragus equinus bakeri, *Slater and Thomas, Book of Antelopes*,

vol. iv, p. 14, 1899; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 475, 1902; *Lydekker, Game Animals of Africa*, p. 296, 1908; *Ward, Records of Big Game*, ed. 6, p. 288, 1910, ed. 7, p. 286, 1914.

Ozanna equinus bakeri, *Roosevelt, African Game Trails*, p. 489, 1910.

Egocerus equinus bakeri, *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 267, 1913.

Typical locality Eastern Sudan.

General colour browner than in preceding races; upper part of forehead at base of horns black in males, chestnut in females; ears relatively long. Good horns measure from 31 to 37¼ inches in length, with a basal girth of from 8¾ to 11½, and a tip-to-tip interval of from 4½ to 17¼ inches.

76. 9. 26. 4. Skull, with horns. Atbara Valley, Abyssinia; collected by Herr Essler. *Purchased* (*Gerrard*), 1876.

76. 9. 26. 5. Skull, with horns. Same locality and collector. *Same history.*

0. 8. 14. 1. Skull, with horns. Gebel Achmed Agha, White Nile.

Presented by Lieut.-Col. Sir W. Garstin, G.C.M.G., 1900.

0. 8. 7. 6. Skull, with horns, and skin, immature. Bahr-el-Jeraf. *Presented by Major H. N. Dunn*, 1900.

2. 8. 15. 1. Skin, mounted, provisionally referred to this race. Kit Valley, Gondokoro, Mongalla Province; collected by Mr. W. G. Doggett. Apparently indicates a form intermediate between *langheldi* and *bakeri*. The black on the face has the same extent as in the Machakos heads of *langheldi*, No. 98. 1. 5. 16.

Presented by Lieut.-Col. C. Delmé-Radcliffe, 1905.

9. 7. 8. 3–4. Two skins, female. South of Meshera Jeraf, White Nile. *Presented by C. C. Tower, Esq.*, 1909.

12. 11. 13 10. Head, mounted. Dinder Valley, Blue Nile; collected by Capt. M. E. T. Gunthorpe.

Presented by Col. E. J. Gunthorpe, 1912.

D.—Hippotragus equinus scharicus.

Hippotragus equinus, *Alexander, From Niger to Nile*, vol. ii, p. 393, 1907.

Egocerus equinus scharicus, *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xi, p. 266, 1913.

Typical locality Abilela, Lower Shari Valley, N. W. Africa. Type in Senckenberg Museum, Frankfort-am-Main.

Stated to be larger than any of the other "Sudan" races (shoulder-height 5 feet 3 inches, according to Alexander), but in colour approximating to the western *H. e. gambianus*, although in the shape of the horns intermediate between the two.

General colour ochery buff, paler on flanks, and suffused with white on neck and shoulders, thus producing a greyish tinge; hairs of mane buffish at base, then brown, and black at tips; dorsal pale brown stripe continued on to tail as a black line; tail-tip black; thighs and limbs ochery, passing into clay-colour above hoofs; black lines round lateral hoofs; a seal-brown band on front of fore-legs extending at least as low as knees; under-parts buffish white; ears very long, ochery on backs, with black terminal tufts; face-markings variable. Nasal bones long and broad; horns long and divergent, with the tips, which may be either inverted or everted, very long, and therefore different from those of *bakeri;* those of *gambianus* being distinguished by their smaller size. Basal length of skull 16¾ inches (425 mm.).

No specimen in collection.

E.—Hippotragus equinus gambianus.

Ægoceros koba, *Gray, Cat. Ruminants Brit. Mus.* p. 35, 1872, *Hand-List Ruminants Brit. Mus.* p. 103, 1873; based on Buffon's "koba" = Antilope koba, *Erxleben.**

Hippotragus koba, *Ward, Records of Big Game*, p. 142, 1892; *Matschie, Mitth. deutsch. Schutz-gebiet*, vol. vi, p. 17, 1893; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 131, 1896.

Hippotragus equinus, *Sclater, Proc. Zool. Soc.* 1896, p. 983, 1898, p. 350.

Hippotragus equinus gambianus, *Sclater and Thomas, Book of Antelopes*, vol. iv, pp. 15 and 28, pl. lxxviii, 1899; *de Winton, Ann. Mag. Nat. Hist.* ser. 7, vol. iv, p. 359, 1899; *Lydekker, Game Animals of Africa*, p. 296, 1908; *Ward, Records of Big Game*, ed. 6, p. 289, 1910, ed. 7, p. 287, 1914.

Egoceros equinus gambianus, *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xii, p. 267, 1913.

* The reasons for rejecting this name are given in vol. ii, p. 39, of this Catalogue. Schwarz, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 34, 1914, considers that the specific name indicates the Korrigum, for which he accordingly employs the name *Damaliscus koba* in place of *D. korrigum.*

Typical locality Gambia.

General colour deep rufous, more marked in young than in aged individuals, the latter being pale tawny, without any bluish grizzling; upper part of forehead chestnut in both sexes; ears very long. Maximum recorded horn-length 33 inches. The range includes Gambia and the Gold Coast.

46. 11. 2. 17. Frontlet and horns. Gambia; collected by Mr. T. Whitfield. Co-type.

Presented by the Earl of Derby, 1846.

46. 11. 2. 18. Frontlet and horns. Same locality and collector. *Same history.*

88. 8. 20. 3. Skull, with horns, and head-skin. Upper Gambia Valley; collected by Dr. P. Rendall.

Purchased (*Gerrard*), 1888.

98. 11. 11. 1. Skull, with horns, and head-skin, immature. Balaga, Beaufort Island, Niger.

Presented by Capt. A. J. Richardson, 1898.

99. 6. 14. 1. Head, mounted. Tumu, Gurunoi, Gold Coast. Noticed by de Winton, *op. cit.*

Presented by Lieut.-Col. H. P. Northcott, 1899.

13. 8. 3. 8. Skull, with horns, and skin. Upper Gambia.

Presented by G. Blaine, Esq., 1913.

14. 5. 12. 1. Skull. Lagos.

Presented by W. A. Ross, Esq., 1914.

III. HIPPOTRAGUS NIGER.

Aigocerus niger, *Harris*, *Proc. Zool. Soc.* 1838, p. 2, *Trans. Zool. Soc.* vol. ii, p. 213, pl. xxxix, 1838, *Portraits Wild Anim. S. Africa*, p. 126, pl. xxiii, 1840, *Wild Sports S. Africa*, ed. 5, pp. 216 and 349, pl. xxii, 1852; *Gray*, *List Mamm. Brit. Mus.* p. 158, 1843, *Knowsley Menagerie*, p. 17, 1850, *Proc. Zool. Soc.* 1850, p. 133; *Cat. Ungulata Brit. Mus.* p. 104, 1852, *Cat. Ruminants Brit. Mus.* p. 35, 1872, *Hand-List Ruminants Brit. Mus.* p. 103, 1873; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 240, 1862; *Sclater*, *Proc. Zool. Soc.* 1864, p. 103; *Kirk*, *ibid.* 1864, p. 658; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 177, 1869; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 480, 1887; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 135, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 166, 1892.

Aigocerus harrisi, *Harris*, *Wild Sports S. Africa*, pp. 261 and 378, 1839.

Antilope nigra, *Gervais*, *Dict. Sci. Nat.*, *Suppl.* vol. i, p. 265, 1840; *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 618, 1842; *Wagner*,

Schreber's Säugthiere, Suppl. vol. iv, p. 484, 1884; vol. v, p. 436, 1855; *Schinz, Synop. Mamm.* vol. ii, p. 442, 1845, *Mon. Antilop.* p. 38, pl. xliii, 1848; *Peters, Reise nach Mossambique, Säugeth.* p. 190, 1852.

Hippotragus niger, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 197, 1846; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 16, 1863; *Sclater, Proc. Zool. Soc.* 1868, p. 218, 1896, p. 506; *Buckley, ibid.* 1876, p. 288; *Bocage, ibid.* 1876, p. 745, *J. Sci. Lisboa*, ser. 2, vol. ii, p. 26, 1890; *Brehm, Thierleben, Säugeth.* vol. iii, p. 227, 1880; *Selous, Proc. Zool. Soc.* 1881, p. 756, *A Hunter's Wanderings in S. Africa*, p. 214, 1881; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 263, 1884; *Johnston, Kilimanjaro*, p. 354, 1886; *Crawshay, Proc. Zool. Soc.* 1890, p. 600; *Flower and Lydekker, Study of Mammals*, p. 343, 1891; *Ward, Records of Big Game*, p. 137, 1892, ed. 6, p. 282, 1910, ed. 7, p. 280, 1914; *Nicholls and Eglington, Sportsman in S. Africa*, p. 50, 1892; *Thomas, Proc. Zool. Soc.* 1893, p. 504, 1896, p. 797, 1897, p. 939; *Lydekker, Horns and Hoofs*, p. 245, 1893, *Great and Small Game of Africa*, p. 397, 1899, *Game Animals of Africa*, p. 290, 1908; *Lorenz, Ann. Hoffmus. Wien*, vol. ix, *Notizen*, p. 62, 1894; *Rendall, Proc. Zool. Soc.* 1895, p. 362; *Matschie, Säugeth. Deutsch-Ostafrika*, p. 134, 1895; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 31, pls. lxxix and lxxx, 1899; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 221, 1900; *Pocock, Proc. Zool. Soc.* 1910, p. 908; *Letcher, Big Game N. E. Rhodesia*, p. 201, 1911; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Ozanna niger, *Reichenbach, Säugethiere*, vol. iii, p. 126, 1845; *Elliot, Cat. Mamm. Field Mus.* (*Field Mus. Zool. Pub.* vol. viii) p. 82, 1907; *Heller, Smithson. Misc. Collect.* vol. liv, no. 6, p. 2, 1910.

Ozanna nigra, *Brehm, Thierleben, Säugeth.* vol. iii, p. 227, 1880.

Hippotragus (Ozanna) niger, *Matschie, Deutsche Jäger-Zeitung*, vol. lix, p. 119, 1912.

Sable Antelope, or Harrisbuck; Zwart Wit Pens (black, white belly).

Type of *Ozanna*.

Typical locality the Cashan range of the north-western Transvaal.

Size inferior to that of *equinus*, the shoulder-height being from about 52 to 54 inches. Horns very long, much compressed; general colour in adult male rich glossy black; a stripe from above eye to muzzle—below which is a narrow black eye-stripe reaching to a point above angle of mouth—lips, muzzle, sides and under surface of lower jaw, upper part of throat, inner surface of ears, a streak on buttocks, fronts of thighs, and under-parts white, contrasting sharply with black areas; tail wholly black; mane, in which the hairs are directed backwards, and throat-fringe well developed; ears of moderate length, without terminal pencils; white

eye-tufts less developed than in *equinus*. Females show more or less rufous, and the young are wholly rufous, with the exception of the tail-crest. Basal length of skull from about 15¾ to 16½ inches, maximum breadth 6½ to 6¾, length from muzzle to orbit about 11 inches. Fine horns of the typical race measure from 45 to over 60 inches in length, with a girth of from 9 to 11, and a tip-to-tip interval of from 7¼ to about 24 inches.

The range extends from the Cashan Range of the north-western Transvaal to British East Africa.

The species has been divided into the following three local races:—

A. General colour of female more or less brownish black ..... *H. n. niger.*

B. General colour of female intermediate in colour between A and C ..... *H. n. kirki.*

C. General colour of female light chestnut, the face-markings and fore-legs being alone black ..... *H. n. roosevelti.*

A.—Hippotragus niger niger.

Typical locality Cashan Mountains, north-western Transvaal.

General character those of the species.

The range extends as far north as the Zambesi.

38. 8. 1. 2. Skull, with horns, and skin. Cashan Mountains, near Pretoria, Transvaal; shot by Sir William Cornwallis Harris in 1836. Type.

Purchased (*Capt. Alexander*), 1838.

1038, *c*. Skull, with horns, immature; from an old skin. S. Africa. *Purchased.*

46. 6. 2. 90. Skin and horns, female. Zululand; collected by Herr J. Wahlberg.

By exchange with the Stockholm Museum, 1846.

51. 3. 25. 27. Pair of horns. S. Africa. *Purchased*, 1851.

52. 9. 22. 1. Skull, with horns, female. S. Africa; collected by R. Gordon-Cumming, Esq. *Purchased*, 1852.

71. 7. 3. 9. Pair of horns. Algoa Bay, S. E. Africa.

Purchased (*Gerrard*), 1871.

83. 7. 28. 3. Skin, mounted. Bili Valley, Mashonaland; collected by F. C. Selous, Esq. *Purchased*, 1883.

83. 7. 28. 4. Skin, mounted, female. Same locality and collector. *Same history.*

84. 8. 1. 2. Skin, mounted, young. Rugarwe Valley, Mashonaland; same collector. The general colour is bright rufous; but the white face-markings of the adult are present. *Purchased*, 1884.

86. 5. 5. 8. Skeleton, with horns, mounted. Umfuli Valley, Mashonaland; same collector. *Purchased*, 1886.

89. 1. 1. 1. Skull, with horns. Port Elizabeth. *Presented by H. Fagan, Esq.*, 1889.

93. 6. 5. 1. Skin. Zomba, Nyasaland. *Presented by Sir H. H. Johnston, G.C.M.G., K.C.B.*, 1893.

94. 3. 18. 5. Skin, immature. Near Lake Mweru, N. W. Rhodesia. *Presented by Sir A. Sharpe, K.C.M.G., C.B.*, 1894.

96. 4. 2. 1. Skull, with horns, and skin. Nyasaland. *Presented by Sir H. H. Johnston, G.C.M.G., K.C.B.*, 1896.

97. 10. 1. 265. Skull, with horns, and skin. Zomba; collected by A. Whyte, Esq. *Same donor*, 1897.

1. 6. 26. 6. Skull, with horns, and head-skin, female. Mpimbi, Nyasaland. *Presented by Lieut.-Col. Manning*, 1901.

7. 10. 25. 8. Frontlet and horns. Portuguese East Africa. *Presented by F. Vaughan Kirby, Esq.*, 1907.

9. 5. 10. 2. Skin. Urugwisi Valley, northern Zambesi. *Presented by H. E. E. Pankhurst, Esq.*, 1909.

9. 5. 10. 3. Skin, female. Same locality. *Same history.*

9. 7. 7. 1. Skin, young. Mpika, N. E. Rhodesia. *Presented by F. H. Melland, Esq.*, 1909.

B.—Hippotragus niger kirki.

Hippotragus niger *var.* kirkii, *Gray, Cat. Ruminants Brit. Mus.* p. 35, 1872; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 32, 1899.

? Hippotragus (Ozanna) niger kaufmanni, *Matschie, Deutsche Jäger-Zeitung*, vol. lix, p. 119, 1912.

Typical locality Zambesia.

Apparently intermediate in the colouring of the female between the preceding and following races. *H. n. kaufmanni*, from Mount Caprivi, between the Chobi and Zambesi,

German S. W. Africa, is said to differ from typical form by face-markings, in which the dark eye-stripe extends to, and expands on, the upper lip. Practically the two types occur respectively in the mounted male and female of the typical race.

6. 3. 3. 1. Skull, with horns, and skin. Near junction of Lari with Kabompo River, upper Zambesia.

Presented by J. N. Micklem, Esq., 1906.

6. 3. 3. 2. Skull, with horns, and skin, female. Same locality. *Same history.*

FIG. 23.—HEAD OF EASTERN SABLE ANTELOPE (*Hippotragus niger roosevelti*).

C.—Hippotragus niger roosevelti.

Ozanna roosevelti, *Heller, Smithson. Misc. Collect.* vol. liv, pt. 6, p. 1, 1910; *Roosevelt, African Game Trails*, p. 486, 1910.

Hippotragus niger roosevelti, *Ward, Records of Big Game*, ed. 6, p. 284, 1910, ed. 7, p. 283, 1914.

Typical locality Shimba Hills, B. E. Africa.

Type in U.S. National Museum.

General colour of female lighter than in typical race, being mainly light chestnut, and the face-markings buffish yellow instead of white. The maximum recorded horn-length is 37 inches.

10. 4. 20. 5. Head, mounted (fig. 23). B. E. Africa. Length of horns 35, girth 8¼, tip-to-tip interval 6½ inches.

Presented by G. D. Muir, Esq., 1910.

III. Genus ADDAX.

Addax, *Rafinesque*,* *Analyse de la Nature*, p. 56, 1815; *Gray, Ann. Mag. Nat. Hist.* ser. i, vol. xviii, p. 232, 1846; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 77, 1899; *Pocock, Proc. Zool. Soc.* 1910, p. 910.

Size and general characters very similar to those of *Oryx*, but horns twisted into a heteronymous corkscrew-like spiral, and the hoofs low, flat, elongated posteriorly, and broad in front; patches of long hairs below the eyes, probably corresponding to the glandular eye-tufts of *Hippotragus;* a tuft on forehead and short mane on sides of neck; hairs of mid-dorsal line not reversed, except occasionally on neck; tail-tuft relatively small.

The range includes the desert tracts of northern Africa as far south as Senegal on the west and Dongola on the east.

ADDAX NASOMACULATUS.

Cerophorus (Gazella) nasomaculata, *Blainville, Bull. Soc. Philom.* 1816, pp. 75 and 76.

Antilope naso-maculata, *Desmarest, Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 188, 1816, *Mammalogie*, vol. ii, p. 456, 1822; *Blainville, Oken's Isis*, 1819, p. 1095, pl. xii, figs. 4–7, *Journ. Phys.* 1819, pl. figs. 4–7; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1242, 1824; *Lichtenstein, Abh. Ak. Berlin*, 1824, p. 215; *Lesson, Man. Mamm.* p. 374, 1827; *J. B. Fischer, Synop. Mamm.*

* No species-name given.

p. 462, 1829; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 617, 1841; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 269, 1887.

Antilope suturosa, *Otto, Nova Acta Nat. Cur.* vol. xii, p. 521, pl. xlviii, 1825; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 206, 1827; *Lesson, Man. Mamm.* p. 382, 1827; *J. B. Fischer, Synop. Mamm.* p. 475, 1829; *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 620, 1840; *Schinz, Synop. Mamm.* vol. ii, p. 439, 1845, *Mon. Antilop.* p. 34, pl. xxxix, 1848.

Antilope addax, *Cretzschmar, Atlas* to *Rüppell's Reise nordl.-Afrika*, p. 19, pl. vii, 1826; *Lichtenstein, Darstellung. Säugeth.* pl. ii, 1827; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 193, pl. vol. v, p. 328, 1827; *Hemprich and Ehrenberg, Symbol. Phys.* Decas ii, pl. iv, 1828; *J. B. Fischer, Synop. Mamm.* p. 474, 1829; *Owen, Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 634, 1868; *Oken, Allgemeine Naturgeschichte*, vol. vii, p. 1379, 1838; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 486, 1844, vol. v, p. 437, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 118, pl. xxxvi, 1845; *Schinz, Synop. Mamm.* vol. ii, p. 438, 1845, *Mon. Antilop.* p. 36, pls. xl and xli, 1848; *Giebel, Säugethiere*, p. 296, 1853–55; *Schweinfurth, Herz von Afrika*, vol. ii, p. 534, 1874.

Antilope mytilopes, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 204, vol. v, p. 330, 1827.

Antilope gibbosa, *Savi, Mem. Sci. Pisa*, vol. i, p. 17, 1828, *Oken's Isis*, 1832, p. 502.

Oryx addax, *A. Smith, S. African Quart. Journ.* vol. ii, p. 188, 1834; *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 205, pl. xxv, 1835; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 206, 1846.

Oryx nasomaculatus, *Gray, List Mamm. Brit. Mus.* p. 156, 1843.

Addax nasomaculatus,* *Gray, Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 232, 1846, *List Osteol. Brit. Mus.* p. 58, 1847, *Proc. Zool. Soc.* 1850, p. 135, *Knowsley Menagerie*, p. 17, 1850, *Cat. Ungulata Brit. Mus.* p. 108, 1852, *Cat. Ruminants Brit. Mus.* p. 36, 1872, *Hand-List Ruminants Brit. Mus.* p. 104, 1873; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 240, 1862; *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, pt. 2, p. 18, 1863, *Reise Nordost-Afrika*, vol. ii, p. 113, 1877; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 178, 1869; *Garrod, Proc. Zool. Soc.* 1877, p. 4; *Brehm, Thierleben. Säugethiere*, vol. iii, p. 235, 1880; *Flower and Lydekker, Study of Mammals*, p. 345, 1891; *Ward, Records of Big Game*, p. 150, 1892, ed. 6, p. 300, 1910, ed. 7, p. 298, 1914; *Lydekker, Horns and Hoofs*, p. 249, 1893, *Great and Small Game of Africa*, p. 394, 1899, *Field*, vol. cxi, p. 107, 1908, *Game Animals of Africa*, p. 302, 1908; *Pease, Proc. Zool. Soc.* 1896, p. 810; *Sclater, ibid.* 1896, p. 984; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 131, 1896; *Johnston, Proc. Zool. Soc.* 1898, p. 352; *Sclater and Thomas, Book of Antelopes*, vol. iii, p. 79, pl. lxxxvi, 1898; *Anderson and de Winton, Zool. Egypt, Mamm.* p. 352, 1902; *Renshaw, Zoologist*, ser. 4, vol. vi, p. 363, pl. ii, 1902; *Pocock, Proc. Zool. Soc.* 1910, p. 910; *Gaillard, Rev. Ethnogr. et Sociol.* 1912, nos. 11 and 12, p. 10; *Hartert, Novit. Zool.* vol. xx, p. 35, 1913.

* Or nasomaculata.

Typical locality probably Senegambia.

Shoulder-height about 38 inches. Horns (fig. 24) as described above, those of females thinner; general colour in winter, when the coat is long and thick, nearly uniform brownish grey, in summer richer and more rufous, except on

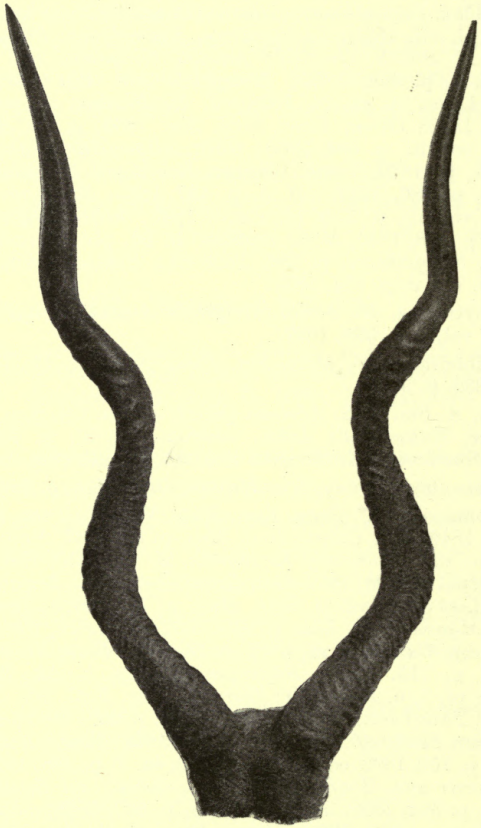

FIG 24.—HORNS OF ADDAX (*Addax nasomaculatus*).
From a photograph lent by Messrs. Rowland Ward, Ltd.

head and neck; tuft of forehead nearly black; back of head behind horns darkish brown; lips and chin, a somewhat X-like patch on face below tuft (sometimes divided by a downward extension of the latter), the greater part of backs of ears, in some instances a patch behind eye, legs, with the exception of the under-mentioned patches, hind-quarters, tail, with the

exception of brownish tuft (when present), and under-parts white; occasionally a blackish area at base of backs of ears, a black patch on lower border of cheeks adjacent to neck, and another between throat and shoulders; a brownish tinge on part of fore-legs, a knee-cap and line round fore and hind lateral hoofs brown. Basal length of skull about 12 inches, maximum breadth 5¼, length from muzzle to orbit 8¼ inches. Fine horns measure from 32 to 39¼ inches along curve, and from 27 to 34½ in a straight line, with a basal girth of from 5½ to 6¾, and a tip-to-tip interval of from 13 to 28½ inches.

Range co-extensive with that of genus.

A.—Addax nasomaculatus nasomaculatus.

Typical locality probably Senegambia.

General characters of the species.

639, *d*. Imperfect skull and horns, with skin attached; immature female. Type of *Antilope nasomaculata* and *A. mytilopes*, but not of the genus *Addax*. Originally in Bullock's Museum, London, and stated by Hamilton Smith to have been obtained probably from Guinea, or at any rate Western Africa; the true locality being probably Senegambia. *Purchased at the sale of Bullock's Museum*, 1819.

639, *b*. Skin, mounted, female. North Africa, probably Senegambia. *Presented by the Earl of Derby, about* 1846.

639, b^1. Skin, mounted, immature. Same locality. *Same history.*

639, *c* and *c*. Skin and skeleton, the latter mounted. N. Africa. *Purchased (Zoological Society).*

639, *a*. Two horns. North-west Africa. *Presented by Lieut.-Col. Denham and Capt. Clapperton, R.N., about* 1826.

99. 3. 19. 1. Frontlet and horns. Algerian Sahara. *Presented by J. Rowland Ward, Esq.*, 1899.

99. 1. 2. 1. Skin, mounted. Tunisian Sahara. *Presented by J. I. S. Whitaker, Esq.*, 1899.

B.—Addax nasomaculatus addax.

Antilope addax, *Cretszchmar*, vide supra, p. 147.
Addax nasomaculatus addax, *Lydekker*, *Field*, vol. cxi, p. 107, 1908, *Game Animals of Africa*, p. 303, 1908.

Typical locality Dongola.

Following the precedent of Sclater and Thomas in the cases of *Gazella leptoceros* and *Oryx algazel* (*supra*, pp. 69 and 129), the addax of the Eastern Sudan may be regarded as racially distinct from the typical addax of north-western Africa, even if its distinctive features are not fully known. It has been suggested that in the Sudan race the winter coat is shorter than in the Tunisian animal, and that there is less white in the neighbourhood of the eye.

6. 4. 23. 1. Skin, immature. North-western Kordofan. *Presented by A. L. Butler, Esq.*, 1906.

8. 1. 3. 1. Skin. Two hundred miles south-west of Dongola. *Presented by Capt. P. E. Vaughan*, 1908.

10. 6. 28. 1. Skull, with horns, and skin. South-west of Dongola. *Presented by G. Blaine, Esq.*, 1910.

Subfamily xvi.—TRAGELAPHINÆ.

Large or medium-sized antelopes with the horns, which, except in two genera, are normally restricted to the males, usually in the form of long, upwardly directed heteronymous spirals, devoid of transverse ridges, but almost always furnished with a longitudinal keel on the front aspect. Muzzle large and naked; face-glands and lachrymal depressions present or absent; inguinal glands sometimes present; true foot-glands wanting, but in one genus a pair of glands in hind lateral, or false, hoofs, these hoofs being always well developed in both limbs; general foot-structure practically the same as in *Bovinæ* (vol. i); two pairs of teats; tail medium and thickly haired throughout, or longer and terminally tufted; markings, when fully developed, in the shape of a white nasal chevron, spots on cheeks, longitudinal bands and transverse stripes on body, spots on haunches, and patches on limbs; these markings being present in the

fœtus. Skull generally with large or small lachrymal vacuities, and frequently a pair of deep pits in frontals. Upper molars broad and relatively short-crowned, but rather taller in the Indian genera, in which they develop an accessory inner column, and thus approximate very closely to those of the *Bovinæ*, to which group these antelopes are considered by Pocock to be closely related.

The distributional area includes Ethiopian Africa and peninsular India. In *Nature*, vol. xci, p. 58, 1913, the writer has given reasons to show that a tragelaphine antelope probably existed in the Euphrates Valley during the Assyrian period.

The genera may be diagnosed as follows:—

A. Face-glands wanting; horns long and spiral; face and body very generally ornamented with white markings, in the form of stripes, bands, and spots.
  a. Horns in both sexes; tail tufted; no inguinal glands.
    a^1. Horns comparatively smooth, forming a simple open lyrate curve ..... *Boöcercus*.
    b^1. Horns very strongly keeled, nearly evenly divergent ..... *Taurotragus*.
  b. Horns (except as an abnormality) restricted to males; tail hairy throughout; inguinal glands present.
    a^2. Horns flattened behind at base, with a strong external basal keel, and rarely forming more than two complete turns of a spiral ..... *Tragelaphus*.
    b^2. Horns rounded behind at base, without external basal keel, and generally forming three complete turns of a more or less open spiral ..... *Strepsiceros*.

B. Face-glands present; horns short, not forming a distinct spiral, wanting in females; body not marked with white bands and stripes.
  a. Size larger; a single pair of horns; face-glands small ..... *Boselaphus*.
  b. Size smaller; typically two pairs of horns; face-glands large ..... *Tetracerus*.

I. Genus TRAGELAPHUS.

Tragelaphus, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75; *Rütimeyer*, *Abh. schweiz. pal. Ges.* vol. v, p. 73, 1878; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 103, 1900; *Pocock*, *Proc. Zool. Soc.* 1910, pp. 848 and 921; *Heller*, *Smithson. Misc. Collect.* vol. lx, no. 8, p. 16, 1912.

Nyala, *Heller*, *Smithson. Misc. Collect.* vol. lx, no. 8, p. 16, 1912.

Face-glands wanting; horns relatively long, restricted to males, with the basal portion of hind surface rounded and a strong external keel, forming, as a rule, not more than two complete turns of a spiral; face, body, and limbs more or less fully marked with white, at least in youth; tail thickly haired throughout; ears large and expanded. Upper molars rather narrow, without inner accessory columns. Inguinal glands present.

Distribution restricted to Ethiopian Africa.

In the typical species the skull is characterised by the comparative shallowness of the nasal notches, large lachrymal vacuities, short premaxillæ, slightly angulated maxillo-jugal sutures, and small basioccipital processes.

The two subgenera here recognised are distinguished as follows:—

A. Hoofs normal; hind surface of pasterns hairy..... *Tragelaphus.*
B. Hoofs elongated; hind surface of pasterns bare.... *Limnotragus.*

1. Subgenus TRAGELAPHUS.

Hoofs normal, and hind surface of pasterns bare.

The three species here recognised are distinguishable as follows:—

A. Nucho-dorsal crest short; a white throat-band; tail shorter.
  a. Size smaller, shoulder-height not exceeding about 30 inches; sexes generally unlike in colour; horn-tips black..... *T. scriptus.*
  b. Size larger, shoulder-height about 52 inches; sexes similar in colour; horn-tips yellow..... *T. buxtoni.*
B. Nucho-dorsal crest elongated into a mane; no white throat-band; tail longer. Shoulder-height about 42 inches ..... *T. angasi.*

I. TRAGELAPHUS SCRIPTUS.

Antilope scripta, *Pallas, Misc. Zool.* p. 8, 1766, *Spicil. Zool.* fasc. i, p. 15, 1767, fasc. xii, p. 18, 1777, based on "Le Guib" of Buffon, *Hist. Nat.* vol. xii, pp. 305 and 327, pls. xl and xli, 1764; *Erxleben, Syst. Regn. Anim.* p. 276, 1777; *Zimmermann, Spec. Zool. Geogr.* p. 539, 1777, *Geogr. Geschichte*, vol. ii, p. 111, 1780; *Gatterer, Brev. Zool.* pt. 1, p. 79, 1780; *Schreber, Säugthiere*, pl. cclviii, 1784; *Boddaert, Elenchus Anim.* p. 140, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 191, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 317, 1792; *Donndorff, Zool. Beyträge*, vol. i, p. 640,

1792; *Link, Beyträge Naturgesch*, p. 99, 1795; *Shaw, Gen. Zool.* vol. i, pt. 2, p. 322, 1801; *Turton, Linn.'s Syst. Nat.* p. 115, 1802; *Desmarest, Nouv. Dict. Hist. Nat.* vol. x, p. 256, 1803; *Cuvier, Dict. Sci. Nat.* vol. ii, p. 245, 1804; *G. Fischer, Zoognosia*, vol. iii, p. 441, 1814; *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 169, 1814; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1212, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 396, 1821, *Synop. Mamm.* vol. ii, p. 428, 1845, *Mon. Antilop.* p. 28, pl. xxx, 1848; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 447, 1822; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 274, vol. v, p. 351, 1827; *J. B. Fischer, Synop. Mamm.* p. 472, 1829; *Masson, Atlas* to *Cuvier's Règne Animal*, pl. xl, fig. 1, 1836; *Owen, Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, p. 634, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 42, 1838; *F. Cuvier, Hist. Nat. Mamm.* vol. iv, pls. 380 and 381, 1842; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 273, 1887.

Cemas scriptus, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. p. 734, 1816.

Tragelaphus scriptus, *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 95, pl. i, 1835; *Gray, List. Mamm. Brit. Mus.* p. 166, 1843, *List Osteol. Brit. Mus.* p. 146, 1847, *Proc. Zool. Soc.* 1850, p. 145, *Knowsley Menagerie*, p. 28, pl. iv, 1850, *Cat. Ungulata, Brit. Mus.* p. 138, 1852, *Cat. Ruminants Brit. Mus.* p. 50, 1872, *Hand-List Ruminants Brit. Mus.* p. 120, 1873; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 189, 1846; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 442, 1844, vol. v, p. 443, 1855; *Temminck, Esquiss. Zool. Guiné*, p. 197, 1853; *Gervais, Hist. Nat. Mamm.* vol. ii, p. 201, 1855; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 246, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 174, 1869; *Flower, Proc. Zool. Soc.* 1875, p. 186; *Garrod. ibid.* 1877, p. 44; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 242, 1880; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 259, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 141, 1887, *Notes Leyden Mus.* vol. x, p. 25, 1888, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 172, 1892; *Büttikofer, Reisebilder Liberia*, vol. ii, p. 380, 1890; *Flower and Lydekker, Study of Mammals*, p. 347, 1891; *Ward, Records of Big Game*, p. 154, 1892, ed. 6, p. 305, 1910, ed. 7, p. 303, 1914; *Lydekker, Horns and Hoofs*, p. 251, 1893, *Game Animals of Africa*, p. 323, 1908; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 82, 1897; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 109, pl. lxxxix, 1900; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 230, 1900; *O. Neumann, Zool. Jahrb.* vol. xiii, p. 569, 1900, *Sitzber. Ges. nat. Freunde*, 1902, p. 97; *Pocock, Ann. Mag. Nat. Hist.* ser. 7, vol. v, p. 94, 1900, *Proc. Zool. Soc.* 1910, p. 929; *Powell-Cotton, Unknown Africa*, p. 575, 1904; *Alexander, From Niger to Nile*, vol. ii, p. 397, 1907; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 545; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Calliope scripta, *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 182, 1842.

Antilope leucophæa, *Forster, Descrip. Anim.* p. 386, 1844, nec *Pallas.*

Antilope (Addax) scripta, *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 62, 1861.

GUIB; BUSHBUCK; HARNESSED ANTELOPE; GUIB; DECULA.

Typical locality Senegal.

The typical and smallest species, the shoulder-height reaching about 30 inches in males of the larger races; sexes differing in colour, the females being generally lighter and redder than the males, with a greater development of the white markings, which, when in their full intensity, include a chevron and spots on the face, a chin-patch, a gorget on the throat and another on the chest, an upper and a lower longitudinal band on each side of the body, between which are a number of narrow vertical stripes, a series of spots on the haunches, and a variable amount of stripes and blotches on the limbs, of which a pair of spots above the main hoofs are the most constant; a short crest of hair on nape of neck and back; coat of moderate length, but apparently always short-haired on the neck of aged males, in which the under-parts are black or blackish, and thus often darker than the back; tips of horns black. Maximum horn-length (2 specimens) $19\frac{3}{4}$ inches.

This species, as here understood, presents such an extraordinary amount of variation in colouring and markings, due to differences of sex, age, and locality—and in some instances perhaps individual—that it is at present impossible to give a key to the local races entitled to recognition. Some of the races are indeed characterised by the white and others by the black dorsal crest, but as there are indications of a transition in this respect, no sufficient grounds for dividing the species into groups can be founded on this character. Much the same may be said with regard to the presence of a short-haired and perhaps glandular collar on the nape of the neck, or its absence, since all bushbucks apparently tend to acquire short-haired necks when fully adult. The lightness or darkness of the under-parts has also been taken as a racial character; but it seems that in old males of all the forms this area tends to become black or dark brown. This is but one exemplification of the tendency in the whole group towards a general darkening in colour and the obliteration of the white markings with age; a tendency which attains its maxima in regions so far apart as Gallaland and Cape Colony. In the forest-zone, on the other hand, the rufous

coloration and fully developed white markings may persist throughout life.

That an excessive number of local races of the species—especially in Abyssinia and East Africa—have received names, seems practically certain; but the material in the collection is quite insufficient to admit of a critical revision in this respect. All that it has been practicable to do is, after the elimination of types, to arrange the specimens under the heading of the race to the typical locality of which they come nearest in point of origin.

The greater number of the named races have been allowed to stand provisionally, although in a few instances so-called subspecies have been included under the heading of forms to which specific rank has been accorded by some writers.

The explanation—offered in vol. ii. in the case of the waterbucks—that many of the so-called subspecies have been named on the evidence of individual herds rather than on true local races will not hold good in the present instance, seeing that bushbucks go about in pairs instead of associating in herds.

For the most part, the races are arranged geographically.

A.—Tragelaphus scriptus scriptus.

Tragelaphus scriptus typicus, *Thomas, Proc. Zool. Soc.* 1891, p. 388; *Bryden, Great and Small Game of Africa*, p. 480, 1899; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 109, 1900; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 231, 1900; *Lydekker, Game Animals of Africa*, p. 325, 1908; *Ward, Records of Big Game*, ed. 6, p. 307, 1910, ed. 7, p. 305, 1914; *Letcher, Big Game N. E. Rhodesia*, p. 172, 1911.

Tragelaphus scriptus scriptus, *Thomas, Proc. Zool. Soc.* 1900, p. 807; *Pocock, ibid.* 1910, p. 930; *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 41, 1914.

Guib.

Typical locality Senegal.

Shoulder-height about 28 inches; neck with a nearly bare collar; dorsal crest white; general colour rich dark rufous, distinctly marked with about ten transverse white stripes, an upper and a lower longitudinal white band, and a circle of white spots on haunches; a marked tendency to

blackness on neck, chest, and limbs; the under-parts being, as in adult males of other races, also black. Female paler, but with much the same markings.

46. 11. 2. 22 (413, *a*). Skull, with horns. Gambia; collected by Mr. T. Whitfield.

Presented by the Earl of Derby, 1846.

46. 11. 2. 23 (413, *b*). Skull, with horns. Same locality and collector. *Same history.*

46. 2. 28. 1. Skin, young, mounted. West Africa.

Same history.

50. 12. 1. 2. Skin, immature, mounted. West Africa.

Purchased (*Zoological Society*), 1850.

64. 6. 15. 1 Skull, with horns. Gambia; collected by Mr. J. T. Dalton. *Purchased*, 1864.

65. 5. 3. 10. Skeleton. Same locality and collector.

Purchased, 1865.

78. 7. 16. 8. Skin. Fanti. *Purchased* (*Gerrard*), 1878.

88. 8. 20. 4. Skull, with horns, and head-skin, immature. Upper Gambia. *Presented by Dr. P. Rendall*, 1888.

99. 10. 23. 1–2. Two skins, one female. Wiasi, 150 miles N.E. of Kumasi, Ashanti.

Presented by C. Beddington, Esq., 1899.

8. 6. 26. 8. Skull, female. Daru, Sierra Leone.

Presented by Capt. Murray, 1908.

8. 12. 18. 4. Skin, mounted. Senegambia.

Presented by F. Russell Roberts, Esq., 1908.

9. 11. 2. 29. Skull, with horns, and skin. Thies, Senegal; collected by Messrs. Riggenbach and Hartert.

Purchased, 1909.

9. 11. 2. 30. Skull and skin, immature female. Same locality and collectors. *Same history.*

10. 4. 18. 2–3. Two skins. Liberia.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1910.

11. 6. 10. 114. Skull, with horns. Upper Gambia.

Presented by G. Fenwick-Owen, Esq., 1911.

13. 8. 3. 8. Skull, female. Upper Gambia.

Presented by G. Blaine, Esq., 1913.

B.—Tragelaphus scriptus obscurus.

Tragelaphus gratus, *Rochebrune, Bull. Soc. Philom.* 1882, p. 9, *Faune Senegamb., Mamm.* p. 123, pl. viii, fig. 1, 1883, nec *Sclater.*

Tragelaphus obscurus, *Trouessart, Cat. Mamm.* vol. ii, p. 958, 1898; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 98; *Lydekker, Game Animals of Africa*, p. 337, 1908; *Matschie, Sitzber. Ges. nat. Freunde*, 1913, p. 545.

Typical locality near mouth of the Senegal River between Cayor and Walo (Oualo). Imperfectly known; apparently allied to typical race, but with only three pairs of transverse body-stripes.

No specimen in collection.

C.—Tragelaphus scriptus phaleratus.

Antilope phalerata, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 275, vol. v, p. 351, 1827; *Schinz, Synop. Mamm.* vol. ii, p. 429, 1845.

Antilope (Tragelaphus) phalerata, *A. Smith, S. African Quart. Journ.* vol. ii, p. 219, 1834; *Lesson, Hist. Nat. Anim.* vol. x, p. 296, 1836, *Nouv. Tabl. Règne Anim.* p. 181, 1842; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 266, 1840; *Reichenbach, Säugethiere*, vol. iii, p. 81, 1845.

Tragelaphus phalerata, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 189, 1846; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 174, 1869; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus phaleratus, *Lydekker, Game Animals of Africa*, p. 125, 1908.

Typical locality near the Great Falls of the Lower Congo.

Nearly allied to typical race; upper longitudinal white band usually present in males, absent in females.

No specimen in collection.

D.—Tragelaphus scriptus makalæ.

Tragelaphus scriptus makalæ, *Matschie, Sitzberg. Ges. nat. Freunde*, 1912, p, 563; *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 42, 1914.

Typical locality Makala, southward of the Lindi Valley (which lies to the south of the Aruwimi).

Type (a headless skin) in the collection of Major Powell-Cotton at Quex Park, Birchington, Kent.

General colour chestnut-brown (Indian maroon), with ten white stripes, of which the third and sixth are distinct, while most of the others are more or less obscurely indicated by lines of elongated hairs; a longitudinal band broken up into large white spots, and bending upwards posteriorly to the dorsal crest, which is white between the first six transverse stripes, but in front and behind this black; six large white spots on haunches; neck apparently as in typical race.

No specimen in collection.

E.—Tragelaphus scriptus knutsoni.

Tragelaphus scriptus knutsoni, *Lönnberg*, *Arkiv Zool.* vol. ii, no. 15, p. 1, 1905; *Lydekker*, *Game Animals of Africa*, p. 324, 1908.

Tragelaphus knutsoni, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Typical locality Upper Manns Valley, Cameruns.

Type in Royal Swedish Museum of Natural History, Stockholm.

Distinguished from typical *scriptus* by fully haired neck, the wholly black dorsal crest of males, which is also present in females, the longer coat, and the differently coloured legs. The fore-legs are yellowish brown, with the fronts black, and a yellowish black-bordered white spot above each hoof; general colour rich dark rufous, with eight indistinct transverse stripes, a well-developed lower longitudinal band, and two spots representing fore part of upper band; also two white spots on shoulders, and about twelve—some very indistinct—on haunches; a white spot below posterior angle of eyes, but none in front of same; under-parts black. Female brighter rufous, without any black on body except the crest, which does not extend so far forward on neck; transverse stripes more distinct, and upper lateral band short but continuous.

413, *g*, *h*. Two skulls, imperfect, with horns, provisionally referred to this race. Victoria Mountains, Cameruns. *Presented by Capt. Burton.*

F.—Tragelaphus scriptus decula.

Antilope decula, *Rüppell*, *Neue Wirbelth. Abyssin.* p. 11, pl. iv, 1835–40; *Schinz*, *Synop. Mamm.* vol. ii, p. 427, 1845; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 78, 1887.

Antilope (Tragelaphus) decula, *Gervais*, *Dict. Sci. Nat.*, *Suppl.* vol. i, p. 266, 1840; *Lesson*, *Nouv. Tabl. Règne Anim.* p. 181, 1842; *Reichenbach*, *Säugethiere*, vol. iii, p. 78, 1845; *Giebel*, *Säugethiere*, p. 311, 1853–55.

Calliope decula, *Rüppell*, *Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 182, 1842.

Tragelaphus decula, *Gray*, *List Mamm. Brit. Mus.* p. 166, 1843, *Proc. Zool. Soc.* 1850, p. 145, *Knowsley Menagerie*, p. 28, 1850, *Cat. Ungulata Brit. Mus.* p. 139, 1852. *Cat. Ruminants Brit. Mus.* p. 50, 1872, *Hand-List Ruminants Brit. Mus.* p. 120, 1873; *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. iv, p. 442, 1844, vol. v, p. 445, 1855; *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1844, p. 189, 1846; *Schinz*, *Mon. Antilop.* p. 26, 1848; *Heuglin*, *Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, p. 20, pl. i, fig. 5, 1863, *Zoogr. Roth. Meer*, p. 26, 1869, *Reise Weiss. Nil*, p. 319, 1869, *Reise Nordost-Afrika*, vol. ii, p. 120, 1877; *Flower*, *Proc. Zool. Soc.* 1875, p. 186; *Brooke*, *ibid.* 1878, p. 884; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 141, 1889, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 173, 1892; *Lydekker*, *Horns and Hoofs*, p. 252, 1893; *Ward*, *Records of Big Game*, ed. 2, p. 196, 1896; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, pp. 81 and 83, 1897; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 105, pl. lxxxviii, 1900; *Lönnberg*, *Archiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus decula, *Thomas*, *Proc. Zool. Soc.* 1891, p. 388; *W. L. Sclater*, *Fauna S. Africa*, *Mamm.* vol. i, p. 233, 1900; *Rothschild*, *Powell-Cotton's Sporting Trip through Abyssinia*, p. 477, 1902; *Lydekker*, *Game Animals of Africa*, p. 328, 1908; *Drake-Brockman*, *Mammals of Somali.* p. 91, 1910; *Ward*, *Records of Big Game*, ed. 6, p. 309, 1910.

(?) Tragelaphus decula fulvo-ochraceus, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 564.

Typical locality Abyssinia.

Height at shoulder about 26 inches. Neck fully haired; dorsal crest black; general colour yellowish or sandy brown, gradually darkening on shoulders and hind-quarters, and so on to under-parts; a white spot below each eye, and another on lower jaw; two longitudinal bands, of which the lower is broken up into streaks, but generally no distinct transverse stripes or haunch-spots; usual throat- and limb-markings present. *T. decula fulvo-ochraceus* is based on the skull and skin of a female from Dungoler, near Lake Tsana (Tana),

Abyssinia, in the collection of Major Powell-Cotton, stated to differ from the female of typical *decula* by the presence of white hairs in the dorsal crest, which is blackish brown instead of chestnut-brown, by the ochery general colour, and the absence of white longitudinal bands.

61, *a*. Skull, with horns, and skin, immature. Abyssinia; collected by Dr. Rüppell. *Purchased.*

74. 11. 2. 7. Skin, mounted, and skull. Salam tributary of the Upper Atbara Valley, Abyssinia.

Purchased (*Gerrard*), 1874.

74. 11. 2. 8. Skin, mounted, and skull, female. Same locality. *Same history.*

76. 9. 26. 8. Skeleton, with horns, mounted. Upper Atbara Valley. *Purchased* (*Gerrard*), 1876.

4. 9. 25. 1. Skull, with horns, and skin, young. Horoso Valley, Abyssinia.

Presented by J. Rowland Ward, Esq., 1904.

12. 11. 13. 1. Head, mounted. Dinder Valley, Abyssinia; shot by Capt. M. E. T. Gunthorpe.

Presented by Col. S. J. Gunthorpe, 1912.

G.—Tragelaphus scriptus meneliki.

Tragelaphus meneliki, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 93; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus meneliki, *Lydekker, Great and Small Game of Africa*, p. 325, 1908, *Suppl.* p. 16, 1911.

Typical locality Gara Mulatta, Burka, and Jaffa Ranges, on upper Webi Shebeli watershed, Arusi Gallaland.

Type in collection of Dr. O. Neumann.

Size large, shoulder-height about 29½ inches; coat long; neck fully haired; dorsal crest black, with a few white hairs posteriorly; general colour ranging from blackish rufous grey (like that of *sylvaticus*, *infra*, p. 162) to deep shining black; no white markings on body with the occasional exception of two or three flecks on haunches; an imperfect white chevron between eyes; white markings on fore-legs much the same as in *multicolor* (*infra*, p. 177), but the spots above hoofs smaller and less distinct. Female light brownish

rufous, much the same as in typical *scriptus*, with no white markings on sides of body, but a fleck on under surface, the remainder of which is whitish yellow-grey.

The female is very similar to the type of *delamerei* (which is a young individual), but may be distinguished by the presence of a white streak on the front of the hind-legs, as well as of throat and breast patches. From *sylvaticus* the male differs by the slight development of white in the dorsal crest, as well as in the leg-markings.

10. 11. 29. 2. Skin, mounted. Sahatu Mountains, Arusi Gallaland. The coat is almost wholly black, and thus different from the examples described by Neumann; but since the specimen comes from practically the same district as the former, it can scarcely be racially distinct.

Presented by Ivor Buxton, Esq., 1910.

H.—Tragelaphus scriptus powelli.

Tragelaphus, subsp. *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 476, 1902.

Tragelaphus powelli, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 547.

Typical locality Managasha Forest, westward of Shoa, Abyssinia.

Type in collection of Major Powell-Cotton, Quex Park, Birchington, Kent.

Resembles *meneliki* and *haywoodi* in the paucity of white markings and the long coat; differs from latter by lighter colour of neck, back, and rump, and the presence of a remnant of a dark crest, replaced by white posteriorly; no short-haired collar on neck; general colour tobacco-brown, somewhat lighter than in *meneliki*, with a blackish blaze on forehead; white limb-markings reduced to a pair of small spots above main hoofs. Female bright rufous, with back of neck and saddle on back dusky; two or three white haunch-spots.

6. 11. 1. 56. Skull, with horns. Managasha Forest; collected by Mr. P. Zaphiro. Topo-type.

Presented by W. N. McMillan, Esq., 1906.

13. 3. 2. 1. Head, mounted, and body-skin (including limbs). Sallé Forest, Giré, Abyssinia.

Presented by L. C. G. Clarke, Esq., 1913.

13. 3. 2. 1. Skin, female. Same locality. *Same history.*

The two following specimens belong to this or one of the allied north-eastern races :—

6. 11. 1. 66. Skull, with horns, and skin. Wotchacha, N. E. Africa; collected by Mr. P. Zaphiro.

Presented by W. N. McMillan, Esq., 1906.

6. 11. 1. 67. Skull, with horns, and skin. Lake Zuay (Zwei), south of Shoa; same collector. *Same history.*

I.—Tragelaphus scriptus multicolor.

Tragelaphus multicolor, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 95; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus multicolor, *Lydekker, Great and Small Game of Africa*, p. 325, 1908; *Ward, Records of Big Game*, ed. 6, p. 309, 1910, ed. 7, p. 307, 1914.

Typical locality Hawash Valley, south-east of Sekua Range, Shoa, Abyssinia.

Type in collection of Dr. O. Neumann.

Size approximately the same as in typical race; neck with a short-haired collar; dorsal crest black; general colour light rufous brown, with a row of four distinct white spots on haunches; under-parts black, with a whitish patch posteriorly; nose blackish brown; a spot below each eye (but no chevron in front) and another on lower jaw, chin, and a throat and a breast patch white; front of fore-legs black, with white patches on sides of knees; a pair of large black-rimmed white spots above both main and lateral hoofs; a white streak down front of hind-legs; tail-tip black.

13. 4. 28. 1. Skin, mounted. Hawash Valley. The two pairs of black-rimmed white spots respectively above main and lateral hoofs are very distinct and characteristic.

Presented by Lord Wodehouse, 1913.

J.—Tragelaphus scriptus fasciatus.

Tragelaphus scriptus fasciatus, *Pocock*, *Ann. Mag. Nat. Hist.* ser. 7, vol. v, p. 95, 1900; *Thomas*, *Proc. Zool. Soc.* 1900, p. 806; *Lönnberg*, *Arkiv Zool.* vol. ii, no. 15, p. 5, 1905; *Lydekker*, *Game Animals of Africa*, p. 324, 1908.

Tragelaphus roualeyni fasciatus, *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 123, 1900.

Tragelaphus fasciatus, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Typical locality, Sen Morettu, Webi Valley, Gallaland.

Very similar to *roualeyni* (*infra*, p. 176) but no short-haired neck-collar—the whole neck having the hairs as short as those of head—and body-hair shorter; general colour reddish yellow, brighter on hind-quarters, and dusky on middle of back; four or five broad distinct tranverse stripes, a broken longitudinal flank-band, and a few spots on haunches white. Basal length of skull 8¼ inches.

94. 2. 27. 7. Skin. Sen Morettu, Webi Valley; collected by Lieut.-Col. H. G. C. Swayne. Type.
Presented by Dr. P. L. Sclater, 1894.

94. 2. 27. 5. Skin. Same locality and collector.
Same history.

94. 2. 27. 6. Skull, with horns, and skin. Same locality and collector. *Same history.*

K.—Tragelaphus scriptus nigrinotatus.

Tragelaphus nigrinotatus, *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1902, p. 97; *Lönnberg*, *Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus nigrinotatus, *Lydekker*, *Game Animals of Africa*, p. 325, 1908.

Typical locality Barsa Valley, Mateland, north of Lake Stefanie.

Type in collection of Dr. O. Neumann.

Described on the evidence of a female, which agrees approximately in size with the tyical race, but lacks a short-haired collar on the neck; general colour reddish fulvous brown, with numerous white spots on haunches; crown, forehead, nose, and nape black; a brownish black saddle, narrowing posteriorly, on back; a spot below hind angle of eyes, another at root of ears, the chin, and patches on throat

and chest white; fore-legs with a black line in front, which is wanting in hind-pair; white patches at sides of knees and above hoofs; tail uniformly fulvous brown above.

12. 2. 10. 1–2. Two skulls, with horns, and skins, immature. Boran country, southern Abyssinia, 180 miles north of Marsabit. *Presented by Lord Cranworth*, 1912.

12. 2. 10. 3. Skull and skin, immature female. Same locality. *Same history.*

13. 3. 2. 3–5. Three skulls, with horns, and skins, immature. Baber Valley, southern Abyssinia.
Presented by L. C. G. Clarke, Esq., 1913.

L.—Tragelaphus scriptus bor.

Tragelaphus bor, *Heuglin, Reise Nordost-Afrika*, vol. ii, p. 122, 1877; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 5, 1905; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 544.

Tragelaphus scriptus bor, *Thomas, Proc. Zool. Soc.* 1900, p. 806; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 5, 1905; *Lydekker, Game Animals of Africa*, p. 324, 1908; *Ward, Records of Big Game*, ed. 6, p. 308, 1910, ed. 7, p. 306, 1914; *Roosevelt, African Game Trails*, p. 486, 1910; *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 41, 1914.

Typical locality Bor, on the White Nile, Bahr-el-Ghazal.

Neck fully haired; dorsal crest black, diffuse; general colour pale brownish, with from three to five transverse white stripes, of which two only are conspicuous; upper longitudinal band very short or wanting, lower broken up into spots; white leg-markings well developed. Basal length of skull 7¼ inches (193 mm.). Female bright rufous, with nape and middle of back fuscous brown, nine or ten stripes, and imperfect upper and lower longitudinal bands.

0. 11. 7. 16. Skin, female. Eighty miles north-east of Lado. *Presented by Dr. Donaldson Smith*, 1900.

2. 9. 2. 2. Skin and loose horns. Wau, Bahr-el-Ghazal.
Presented by Capt. A. E. Haynes, 1902.

M.—Tragelaphus scriptus pictus.

Tragelaphus scriptus pictus, *Schwarz, Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 41, 1914.

Typical locality Dugnia, Lower Shari Valley, Lake Chad district.

Type in Senckenberg Museum, Frankfort-am-Main.

Allied to *T. s. bor*, but somewhat brighter coloured, with more distinct markings. General colour pale reddish brown (dark cinnamon), lighter on flanks; under-parts blackish brown; neck short-haired, buffish, speckled with black; a sooty patch on withers; dorsal crest mingled with white; crown and cheeks light brownish; dark bands on fore-legs and above hocks conspicuous; transverse stripes narrow but fairly distinct; two longitudinal bands general present, but tending to disappear with age; spots on haunches small. Skull rather large (basal length 8½ inches = 215 mm.), with the auditory bullæ much larger than in *bor*.

7. 7. 8. 233. Skin. Shari Valley, Lake Chad district; collected during the Alexander-Gosling Expedition.

Presented by the Alexander-Gosling Expedition, 1907.

The following Nigerian specimens are probably referable, respectively, to one or other of this and the two following races:—

99. 8. 24. 5. Skull and skin. Jebba, Nigeria.

Presented by Dr. C. Christy, 1899.

5. 5. 10. 11. Skin. Wasé, Northern Nigeria.

Presented by Dr. H. K. W. Kumm, 1905.

6. 2. 12. 3–4. Two skulls, with horns, and skins. Twelve miles north of Yola, Northern Nigeria.

Presented by W. T. Gower, Esq., 1906.

12. 7. 16. 4. Fœtal skin. Nassarawa Province, Nigeria.

Presented by D. Cator, Esq., 1912.

N.—Tragelaphus scriptus signatus.

Tragelaphus scriptus signatus, *Schwarz*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 42, 1914.

(?) Tragelaphus scriptus punctatus, *Schwarz*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 42, 1914.

Typical locality "Les M'Brous," Tomé Valley, near the Gribingé-Ubangui Watershed, N. W. Africa.

Type in Senckenberg Museum, Frankfort-am-Main.

Differs from *pictus* by its inferior size (basal skull-length (8⅛ inches = 206 mm.), longer coat, and deeper colour, which

is reddish brown (bistre) above, paler on the flanks, and brownish black below, with the neck and cheeks lighter and the crown darker than the back; dark band on fore-legs black on inner, but indistinct on outer side; dorsal crest with less white than in *pictus*, and its continuation as a dark line on neck broader; white spots on haunches fewer but rather larger. Female typically with more rufous neck, smaller black markings, and under-parts like flanks.

The so-called *T. s. punctatus*, founded on a female skin in the Senckenberg Museum from Duma, Ubangui Valley, is stated to differ from *signatus*, by its shorter coat, larger spots, and yellowish rusty brown colour above, which becomes lighter on shoulders, thighs, and legs, and orange-buff on under-parts; neck lighter buff, slightly speckled with blackish, which disappears on crown and cheeks; no dark patch on withers; a white spot below each eye; dark line on middle of face narrow, not interrupted on forehead. Its claim to distinction is more than doubtful.

7. 7. 8. 231. Skin. Ubangui Valley, Northern Nigeria; collected during the Alexander-Gosling Expedition.
Presented by the Alexander-Gosling Expedition, 1907.

7. 7. 8. 232. Skull, with horns, and skin. Ubangui Valley; collected during the Alexander-Gosling Expedition.
Same history.

0.—Tragelaphus scriptus uellensis.

Tragelaphus scriptus uellensis, *Schwarz*, *Ann. Mag. Nat. Hist.* ser. 8, vol. xiii, p. 43, 1914.

Typical locality Angu, Wellé Valley.

Type in Senckenberg Museum, Frankfort-am-Main.

General colour rusty brown (tan), vermiculated with black and with black tips to hairs; under-parts brownish black (warm sepia), divided by a dull brownish zone from rufous of rump; neck pale yellow, heavily speckled with black; no dark patch on withers; crown and forehead darker than cheeks; hairs of dark band on fore-legs ringed with pale yellowish and blackish brown; dark line on nose broad, somewhat X-shaped, interrupted on forehead; hind portion of dorsal crest mingled with white; transverse

stripes distinct; longitudinal bands more developed, and spots on haunches more numerous and rather smaller than in the so-called *punctatus*.

Appears to bear much the same relation to *bor* as is presented by *punctatus* [= *signatus*] to *pictus* (Schwarz).

No specimen in the collection can be definitely identified with this form.

P.—Tragelaphus scriptus cottoni.

Tragelaphus cottoni, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 552.

Including:—

Tragelaphus cottoni meridionalis, *Matschie*, *op. cit.* p. 555, 1912.
Tragelaphus cottoni dodingæ, *Matschie*, *op. cit.* p. 556, 1912.

Typical locality Farajala, westward of Lado, on the Koda, a tributary of the Bahr-el-Jebel. The typical locality of *meridionalis* is about 40 miles north of Wadelai, Uganda; and that of *dodingæ* the Kedef Valley, on the western flank of the Dodinga Range, east-north-east of Dufilé, and therefore to the east of the White Nile, whereas the other two forms are from the west of the same. Types in collection of Major Powell-Cotton at Quex.

Typically a small short-haired race, with a short-haired neck-collar, and a black dorsal crest mingled with white hairs; general colour brownish ochre, with a greyish suffusion; a white longitudinal band broken up into spots, and, it is stated, nine white transverse stripes,* numerous white spots on haunches, and a white mark on neck; underparts black, grey in female.

The more southern specimens described as *meridionalis* are stated to be rather larger, with certain slight differences in general colour, and having only three distinct white transverse stripes and a fourth represented by spots, eight to ten spots on haunches, two spots on the shoulder near the end of the longitudinal band, and the tail-tip mingled black and brown instead of wholly black.

The bushbuck described as *T. c. dodingæ* is stated to be

* In the type I could detect only five distinct stripes on one side and four on the other.

very similar, both in coloration and size, to typical *cottoni*, but with a longer skull (basal length 214 mm., against 205–207 mm.), and the "legs" of the horseshoe-mark on the fore part of the back shorter. Female apparently smaller than in typical *cottoni*.

No specimen in the collection has been identified with this form.

Q.—Tragelaphus scriptus locorinæ.

Tragelaphus locorinæ, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 564.

Including:—

Tragelaphus locorinæ laticeps, *Matschie, op. cit.* p. 565, 1912.

Typical locality southward of Mount Dodinga, and northwards of Mount Marangolé, north-west Turkana, near Mount Locorina, south Toposa.

Type in collection of Major Powell-Cotton at Quex.

Typically a large form, with a nearly bare collar on neck, and the dorsal crest black, mingled with a few white hairs; general colour bright ochery rufous, very dark on back, where the hair-tips are black, on chest suffused with grey; under-parts black; chin and a line leading from it to throat-patch white. A line of seven white spots on sides of body of female, which is lacking in male; two white spots on haunches; under-parts black. Basal length of skull 232 mm., maximum width 107 mm.

T. l. laticeps is based on a skull and skin from the north-west foot of Mount Debasien, north of Elgon, in the collection of Major Powell-Cotton. The skin agrees closely with the typical *locorinæ* in colour, but is of smaller size, and the skull is relatively broader.

No specimen in the collection has been identified with this form.

R.—Tragelaphus scriptus dianæ.

Tragelaphus dianæ, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 557.

Tragelaphus dianæ simplex, *Matschie, op. cit.* p. 560, 1912.

Tragelaphus dianæ sassæ, *Matschie, op. cit.* p. 561, 1912.

Typical locality Kalakaba, about 40 miles from Mahagi, at the north end of the Albert Nyanza, below the watershed of the Ituri. The typical locality of *d. simplex* is the Ituri Valley, near Kifuku and Irumu; and that of *d. sassæ* Kasindi, north of the Albert Edward Nyanza, where *simplex* is also stated to occur.

Type in the collection of Major Powell-Cotton at Quex.

Typically a large, short-haired, and long-tailed race, in which the total length of the skin is fully 63 inches (160 cm.), and that of the tail 11⅜ to 13 inches (29–33 cm.). Neck with a short-haired collar; dorsal crest blackish brown with a few white hairs, but in immature males largely mingled in its hind portion with white and ochery brown hairs; general colour orange-ochre, with a rufous tinge in females and young males; middle line of under-parts black, but orange-ochre in females; markings variable, being in some cases indicated only by a few transverse lines of longer hairs, but in others by from four to nine transverse stripes, of which some show white spots, and a longitudinal line of flecks, with a few spots on upper part of thigh. The so-called *d. simplex* is stated to differ by its smaller size and paler colouring, the general tint being more ochery and less inclined to rufous; *d. sassæ* is intermediate in size between the two others, very similar in colour to the first, but greyer, with a distinct longitudinal line of white flecks, which tend to unite posteriorly into a band, four or five more or less distinct transverse white stripes, five large spots on haunches, and the posterior half of the dorsal crest nearly white.

Some of the following specimens may belong to this form.

63. 7. 7. 5 (649, *i*). Skull, with horns. Uganda.
Presented by Capt. J. H. Speke, 1863.

63. 7. 7. 5* (649, *j*). Skull, with horns, and scalp-skin attached. Same locality. *Same history.*

6. 12. 4. 121. Skull and skin, immature female. Ruwenzori, north of the Albert Edward Nyanza, and thus very near the typical locality of *sassæ*.
Presented by R. B. Woosnam Esq., 1906.

3. 2. 12. 2. Skin (skull in Cambridge Museum). East shore of Albert Nyanza.
Presented by J. S. Budgett, Esq., 1903.

8. 2. 14. 9–10. Two skulls, with horns. South Buhuru Valley, below junction with Buvina, southern Angoniland, Uganda. *Presented by C. B. C. Storey, Esq.*, 1908.

8. 2. 14. 17. Skin. Jacqua, at junction of South Buhuru Valley, with Karitu, southern Angoniland.

Same history.

5. 4. 3. 5. Skull, with horns, and skin. Budda, Uganda; collected by Mr. W. G. Doggett.

Presented by Lieut.-Col. C. Delmé-Radcliffe, 1905.

S.—Tragelaphus scriptus dama.

Tragelaphus dama, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 97; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, pp. 544 and 546.

Tragelaphus scriptus dama, *Lydekker, Game Animals of Africa*, p. 324, 1908; *Hollister, Smithson. Misc. Collect.* vol. lvi, no. 2, p. 9, 1910; *Roosevelt, African Game Trails*, p. 486, 1910.

Typical locality Kavirondo, near the north-east shore of the Victoria Nyanza.

Type in collection of Dr. O. Neumann.

Described on the evidence of body-skins, which do not show hairing of neck. Dorsal crest white; general colour fulvous brown, darker below than above; no white transverse stripes, but numerous white spots on haunches and fore-legs, and a longitudinal row of same on flanks. Female light reddish brown, not darker on under-parts.

No specimen in collection referred to this form.

T.—Tragelaphus scriptus haywoodi.

Tragelaphus haywoodi, *Thomas, Proc. Zool. Soc.* 1905, vol. ii, p. 181, *Abs. Proc. Zool. Soc.* 1905, p. 9; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus haywoodi, *Roosevelt, African Game Trails*, p. 486, 1910.

(?) Tragelaphus haywoodi brunneus, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 549.

Typical locality Nyeri, near upper Guaso-nyiro, north-west of Kenia, B. E. Africa; *brunneus* is from the westward of Kenia.

Size large, with the neck fully haired, the dorsal crest black as far as withers, but posteriorly whitish with some

black hairs; general colour very dark, the nape being black, the fore-quarters blackish brown, passing into dark reddish brown on middle of back and with deeper rufous on rump, and the flanks gradually darkening into the black under-parts; three inconspicuous whitish transverse stripes, and a few white spots on haunches; forehead and crown deep rusty red; cheeks tawny ochre; nose nearly black, with an incomplete white chevron in front of the eyes, and a pair of white spots on each side behind and below them.

5. 5. 16. 3. Skull, with horns, and skin (scalp separate). Nyeri. Type. *Presented by C. W. Haywood, Esq.*, 1905.

Some of the East African specimens entered under other headings may be referable to this race.

U.—Tragelaphus scriptus delamerei.

Tragelaphus delamerei, *Pocock*, *Ann. Mag. Nat. Hist.* ser. 7, vol. v, p. 95, 1900; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 129, 1900; *Thomas*, *Proc. Zool. Soc.* 1900, p. 806; *Lönnberg*, *Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, p. 545.

Tragelaphus scriptus delamerei, *Lydekker*, *Game Animals of Africa*, p. 324, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 309, 1910, ed. 7, p. 307, 1914; *Heller*, *Smithson. Misc. Collect.* vol. lxi, no. 13, p. 1, 1913.

Tragelaphus tjæderi, *Allen*, *Bull. Amer. Mus. Nat. Hist.* vol. xxvi, p. 148, 1909; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1912, pp. 545 and 547.

Tragelaphus scriptus tjæderi, *Lydekker*, *Game Animals of Africa*, *Suppl.* p. 16, 1911.

Typical locality Sayer Valley, N.W. of Mount Kenia, near Gessima, British East Africa.*

Described from an immature female specimen. Neck with a short-haired collar; dorsal crest (non-existent in type) white; general colour dark yellowish brown, passing into yellowish fawn on shoulders and lower half of hind-quarters, and becoming paler on under-parts; no white body-markings; head ruddy brown on forehead, with a blackish band along muzzle, but no white stripe running inwards from corner of eyes; white throat and chest bands small, the former nearly obsolete; outer and inner sides of fore-legs yellowish brown, with the front of the shanks to a little

* In original description the locality was given as Somaliland.

above knees blackish, and the pasterns black except for a pair of small white spots above hoofs; hind-legs (in type) similarly coloured, but paler above, with a white patch in front of hocks.

T. tjæderi, of which the typical locality is Nakuru, B. E. Africa, only a comparatively short distance west of Kenia (from which it is separated by the Aberdare Range), was described as differing from *delamerei* by the under-parts being darker than the back, by the larger throat and chest bands, and by the presence of a white stripe on front of hind-shanks and of a white dorsal crest. Most or all of these points of difference are due to differences of sex or age. The type is in the U.S. National Museum, Washington.

0. 3. 27. 23. Skull and skin, immature female. Sayer Valley, N.W. of Mount Kenia. Type.

Presented by the Lord Delamere, 1900.

V.—Tragelaphus scriptus eldomæ.

Tragelaphus eldomæ, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 550.

Typical locality Eldoma Ravine, Mau Forest, B. E. Africa.

Type in collection of Major Powell-Cotton at Quex.

A large, stoutly built, and long-haired race, with a nearly bare collar on neck, and a blackish brown dorsal crest intermingled with many light brownish grey hairs; general colour bistre-brown, darkest on back and lightest on shoulders, neck, and forehead, with a longitudinal row of six light spots, and two or three faint ones on the haunches; under-parts deep blackish brown. In female only three or four distinct lateral spots, but from six to eight more or less defined ones on haunches; dorsal crest mixed with a few white hairs. Skull with a very narrow forehead (54·5 mm.).

The following specimens represent this or some of the other B. E. African forms which have received separate names :—

3. 3. 17. 1. Skin. Nandi Forest, B. E. Africa.
Presented by L. E. Caine, Esq., 1903.

6. 3. 10. 4. Skin. Londiani, B. E. Africa.
Presented by F. C. Selous, Esq., 1906.

W.—Tragelaphus scriptus olivaceus.

Tragelaphus scriptus olivaceus, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 13, p. 1, 1913.

Typical locality Maji-ya-Chumbi, B. E. Africa.

Type in U.S. National Museum, Washington.

Smaller and lighter-coloured than *delamerei;* general colour greyish olive, without any rufous suffusion; hair of neck short throughout; dorsal crest white; sides and hind-quarters with white spots; legs seal-brown (except where white); auditory bullæ of skull large. Female cinnamon-coloured, with from six to eight white transverse stripes, a longitudinal row of white spots, and a few white spots on the haunches; crown of head and nose olive-brown, without a white chevron in front of eyes, which is, however, present in females. The short-haired neck would appear to be merely a character of full maturity.

The range is stated to extend along "the edge of the Taru Desert and the moist coast-strip from Kilimanjaro northward at least as far as the Tana River. It is a lighter-coloured race than either *masaicus* or *delamerei*, and is readily distinguished by its lack of any rufous coloration in the male" (Heller).

No specimen in the collection has been identified with this form.

X.—Tragelaphus scriptus massaicus.

Tragelaphus massaicus, *O. Neumann, Sitzber. Ges. nat. Freunde,* 1902, p. 96; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 5, 1905; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 544.

Tragelaphus scriptus masaicus, *Lydekker, Great and Small Game of Africa*, p. 324, 1908; *Ward, Records of Big Game*, ed. 6, p. 307, 1910, ed. 7, p. 306, 1914; *Heller, Smithson. Misc. Collect.* vol. lxi, no. 13, p. 2, 1913.

Typical locality Upper Bubu Valley, north-west of Irangi, German East Africa.

Type in collection of Dr. O. Neumann.

Resembling *multicolor* in general type of colouring, but with the black of the under-parts less sharply defined from the rufous brown of the sides; the dorsal crest, four or more

transverse stripes, and a large number of spots on the haunches white; head with much more white, notably a spot on the nose; front of fore-legs with a black stripe, which is wanting in hind-pair. Female bright rufous brown, not darker below than above, with the white markings more defined.

79. 11, 12. 20 (649, *k*). Skull, with horns. Mombasa; collected by Sir John Kirk, G.C.M.G., K.C.B.

Purchased (*Gerrard*), 1879.

80. 6. 9. 1. Skin, mounted, female. One hundred miles inland from Zanzibar; same collector.

Purchased (*Gerrard*), 1880.

84. 11. 10. 3. Skin, mounted. Manda Island, Zanzibar.

Purchased (*Gerrard*), 1884.

The reference of the Nyasa bushbuck to this race is provisional.

91. 5. 9. 6. Skull, imperfect, with horns, Nyasaland.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1891.

93. 5. 6. 1–2. Two skulls, with horns, and skins. Zomba, Nyasaland; collected by A. Whyte, Esq.

Same donor, 1893.

93. 5. 6. 3. Skull, with horns, and skin, young. Same locality and collector. *Same history.*

93. 6. 5. 3. Skull, with horns, and skin. Same locality and collector. *Same history.*

93. 6. 5. 4. Skull, with horns, and skin, young. Same locality and collector. *Same history.*

93. 6. 5. 5. Skull, with horns, and skin. Same locality and collector. *Same history.*

93. 7. 9. 28. Skull, with horns. Same locality and collector. *Same history.*

94. 3. 8. 12. Fœtal skin. Lake Mweru district; collected by Sir Alfred Sharpe, K.C.M.G., C.B. *Same donor*, 1894.

94. 6. 7. 8. Skull, with horns, and skin. Zomba; collected by A. Whyte, Esq. *Same history.*

96. 10. 26. 1–2. Two skulls, with horns, and skins. Summit of Mount Zomba.

Presented by Sir Alfred Sharpe, K.C.M.G., C.B., 1896.

99. 6. 29. 10. Skull, with horns, and head-skin. Zomba.

Same donor, 1899.

Y.—Tragelaphus scriptus meruensis.

Tragelaphus sylvaticus meruensis, *Lönnberg, Sjöstedt's Kilimandjaro-Meru-Exped.* p. 48, 1908; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 544.

Tragelaphus scriptus meruensis, *Lydekker, Game Animals of Africa, Suppl.* p. 16, 1911.

Typical locality Meru Plateau, west of Kilimanjaro, German East Africa.

Type in Royal Swedish Museum of Natural History, Stockholm.

Allied to *masaicus*, from which it differs by the absence of white body-stripes and of a white stripe below eye, although the two cheek-spots persist. General colour dark reddish brown, passing into smoky brown on shoulders and sides of chest; under-parts smoky brownish grey.

92. 10. 18. 14. Skull, female, probably belonging to this form (if distinct). Kilimanjaro; collected by Sir F. J. Jackson, K.C.M.G., C.B.

Presented by J. Rowland Ward, Esq., 1892.

Z.—Tragelaphus scriptus ornatus.

Tragelaphus scriptus ornatus, *Pocock, Ann. Mag. Nat. Hist.* ser. 7, vol. v, p. 94, 1900; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 110, 1900; *Thomas, Proc. Zool. Soc.* 1900, p. 807; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, p. 6, 1905; *Lydekker, Game Animals of Africa*, p. 325, 1908.

Tragelaphus ornatus, *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 644.

Typical locality Linyanti, in the swamps of the Chobi, between Lake Ngami and the Zambesi.

Shoulder-height about 28 inches; neck with a short-haired collar; dorsal crest white; general colour rich dark rufous, passing in places into black; upper longitudinal white band wanting, about six to eight transverse white stripes, and a number of spots on haunches; outer sides of legs blackish above knees and hocks, reddish below, inner sides white close up to body; a broad black band above knees and hocks; back and inner sides of knees and fronts and inner sides of hocks white, whence a white stripe extends along inner and front edges of shanks to the pasterns, which are

blackish, with a large white patch in front above hoofs. Only three transverse stripes in female.

81. 4. 20. 4. Skin, mounted. Linyanti, Chobi Valley; collected by F. C. Selous, Esq. Type. *Purchased*, 1881.

81. 4. 20. 5. Skin, mounted, female. Same locality and collector. *Same history.*

81. 4. 20. 6. Skin, mounted, immature. Same locality and collector. *Same history.*

99. 8. 17. 1. Frontlet and horns. Zambesia; reference provisional. *Presented by F. H. Barber, Esq.*, 1899.

91. 3. 2. 1. Skull, with horns, and skin. Lower Zambesi; collected by F. C. Selous, Esq. *Purchased* (*Gerrard*), 1891.

Z[1].—Tragelaphus scriptus roualeyni.

Antelopus roualeynei, *Gordon-Cumming*, *A Hunter's Life in S. Africa*, vol. ii, pp. 165 and 168, 1850; *Gray*, *Proc. Zool. Soc.* 1850, p. 146, *Cat. Ungulata Brit. Mus.* p. 140, 1852.

Tragelaphus sylvaticus, *Peters*, *Reise nach Mossambique*, *Mamm.* p. 183, 1852; *Sclater*, *Proc. Zool. Soc.* 1864, p. 105; *Kirk*, *ibid.* 1864, p. 659; *Johnston*, *ibid.* 1885, p. 218; *Crawshay*, *ibid.* 1890, p. 655; *Jackson*, *ibid.* 1897, p. 456; nec *Sparrman*.

Tragelaphus roualeynei, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 175, 1869; *Selous*, *Proc. Zool. Soc.* 1881, p. 753, *A Hunter's Wanderings in S. Africa*, p. 209, 1881; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 138, 1895, *Werther's Die mittl. Hochländ. Deutsch-Ostafrika*, p. 257, pl. 1898, *Sitzber. Ges. nat. Freunde*, 1912, p. 544; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 123, pl. xc, fig. 1, 1900; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1900, p. 562; *Lönnberg*, *Arkiv Zool.* vol. ii, no. 15, p. 5, 1905.

Tragelaphus scriptus roualeyni, *Thomas*, *Proc. Zool. Soc.* 1891, p. 389, 1893, p. 504, 1896, p. 798; *True*, *Proc. U.S. Nat. Mus.* 1892, p. 471; *Sclater*, *Proc. Zool. Soc.* 1893, pp. 507 and 728; *Rendall*, *Novit. Zool.* vol. v, p. 211, 1898; *W. L. Sclater*, *Fauna S. Africa*, *Mamm.* vol. i, p. 231, 1900; *Lydekker*, *Game Animals of Africa*, p. 325, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 306, 1910, ed. 7, p. 304, 1914; *Pocock*, *Proc. Zool. Soc.* 1910, p. 930.

Tragelaphus sylvaticus roualeyni, *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 306, 1894, *Great and Small Game of Africa*, p. 481, 1899.

Tragelaphus roualeyni typicus, *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 123, 1900.

Typical locality Bakarikari (Makarikari), near the sources of the Limpopo.

Nearly allied to the under-mentioned southern race

(*sylvaticus*), but with rather more pronounced white markings in immature individuals; these almost or completely disappearing in adults, of which the general colour is nearly black or brownish grey. Females (like immature males) redder, usually with faintly marked stripes and spots.

How far north this race extends is not yet ascertained.

52. 9. 22. 2. Skull, with horns. Limpopo Valley. May be regarded as the type; figured in *The Book of Antelopes*, vol. iv, figs. 100 and 101, pp. 126 and 127.

Presented by Roualeyn Gordon-Cumming, Esq., 1852.

Z².—Tragelaphus scriptus sylvaticus.

Antilope sylvatica, *Sparrman, Act. Holm.* 1780, p. 197, pl. vii, *Reise Cap.* p. 517, pl. iii, 1784, *English Transl.* (*Voyage to Cape of Good Hope, etc.*) vol. i, p. 270, vol. ii, p. 220, pl. vi, 1786, *French Transl.* vol. i, p. 293, pl. iii; *Schreber, Säugthiere*, pl. cclvii, B., 1784; *Boddaert, Elenchus Anim.* p. 141, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 192, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 318, 1792; *Donndorff, Zool. Beyträge*, p. 643, 1792; *Link, Beyträge Naturgeschichte*, vol. ii, p. 99, 1795; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 348, 1801; *Turton, Linn.'s Syst. Nat.* vol. i, p. 115, 1802; *Cuvier, Dict. Sci. Nat.* vol. ii, p. 246, 1804; *Thunberg, Mém. Ac. Sci. St. Pétersb.* vol. iii, p. 315, 1811; *Lichtenstein, Reise*, vol. i, p. 647, 1811; *G. Fischer, Zoognosia*, vol. iii, p. 441, 1914; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Burchell, List Quadr. presented to Brit. Mus.* p. 7, 1817; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1209, 1818; *Schinz, Cuvier's Thierreich*, vol. i, p. 396, 1821, *Synop. Mamm.* vol. ii, p. 428, 1845, *Mon. Antilop.* p. 27, pl. xxix, 1848; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 447, 1822; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 275, vol. v, p. 350, 1827; *J. B. Fischer, Synop. Mamm.* p. 472, 1829; *Smuts, Enum. Mamm. Cap.* p. 87, 1832; *Owen, Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 364, 1868; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 42, 1838; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 480, 1887.

Antilope (Gazella) sylvatica, *Lichtenstein, Mag. Nat. Freunde*, vol. vi, p. 173, 1814.

Cemas sylvatica, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 733, 1816.

Tragelaphus sylvaticus, *Blainville, Bull. Soc. Philom.* 1816, p. 75; *Desmarest, Nouv. Dict. Hist. Nat.* vol. ii, p. 197, 1816; *Harris, Wild Anim. S. Africa*, pp. 144 and 149, pl. xxvi, 1840; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 266, 1840; *Lesson, Nouv. Tabl. Règne Anim., Mamm.* p. 181, 1842; *Gray, List Mamm. Brit. Mus.* p. 165, 1843, *List Osteol. Brit. Mus.* pp. 59, 60, and 146, 1847, *Proc. Zool. Soc.* 1850, p. 145, *Knowsley Menagerie*, p. 28, 1850, *Cat. Ungulata Brit. Mus.* p. 139, 1852, *Cat. Ruminants Brit. Mus.* p. 50, 1872, *Hand-List Ruminants Brit. Mus.* p. 120, 1873,

Sundevall, K. Svenska Vet.-Ak. Handl. 1844, p. 189, 1846; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 441, vol. v, p. 443, 1855; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 246, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 174, 1869; *Drummond, Large Game S. Africa*, p. 425, 1875; *Brooke, Proc. Zool. Soc.* 1878, p. 884; *Selous, ibid.* 1881, p. 752, *A Hunter's Wanderings in S. Africa*, p. 208, 1881; *Flower* and *Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 260, 1884; *Bryden, Kloof and Karroo*, p. 300, 1889; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 141, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 173, 1892; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 154, 1891; *Flower and Lydekker, Study of Mammals*, p. 347, 1891; *Nicolls and Eglington, Sportsman in S. Africa*, p. 37, 1892; *Ward, Records of Big Game*, p. 152, 1892; *Lydekker, Horns and Hoofs*, p. 252, 1893; *Rendall, Proc. Zool. Soc.* 1895, p. 359; *Pousargues, Ann. Sci. Nat. Zool.* ser. 7, vol. iv, pp. 81 and 83, 1897; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 117, pl. xc, fig. 2, 1900; *O. Neumann, Sitzber. Ges. nat. Freunde*, 1902, p. 93; *Lönnberg, Arkiv Zool.* vol. ii, no. 15, pp. 5 and 7, 1905; *Elliot, Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 85, 1907; *Matschie, Sitzber. Ges. nat. Freunde*, 1912, p. 544; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Antilope (Tragelaphus) sylvatica, *Desmarest, Mammalogie*, p. 469, 1822; *Lesson, Man. Mamm.* p. 383, 1827, *Hist. Nat. Anim.* vol. x, p. 296, 1836; *A. Smith, S. African Quart. Journ.* vol. ii, p. 218, 1834; *Reichenbach, Säugethiere*, vol. iii, p. 78, 1845; *Giebel, Säugethiere*, p. 309, 1853–55.

Calliopé sylvatica, *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 182, 1845.

Tragelaphus scriptus sylvaticus, *Thomas, Proc. Zool. Soc.* 1891, p. 389; *Kirby, Great and Small Game of Africa*, p. 484, 1899; *W. L. Sclater, Fauna of S. Africa, Mamm.* vol. 1, p. 230, 1900; *Lydekker, Game Animals of Africa*, p. 398, 1908; *Ward, Records of Big Game*, ed. 6, p. 306, 1916, ed. 7, p. 304, 1914.

Boschbok, or Bushbuck.

Typical locality Groot Vadersbosch district, Cape Colony.

Size approximately as in typical race; neck with a short-haired collar; dorsal crest white. General colour deep blackish brown, without longitudinal bands or transverse stripes, but with a few small white spots on the haunches, and one or two on the shoulders. Subadult males almost greyish brown on back and reddish brown on rump and flanks, with about nine white spots on haunches, and the lower longitudinal band represented by a line of spots. Females light reddish brown, marked much as in immature males.

7, *e*. Skull, with horns, and skin. Cape of Good Hope; collected by Dr. A. Krauss. *Purchased.*

7, *c*. Skin, mounted, female. Same locality and collector. *Same history.*

7, *d* (649, *m*). Skull, with horns, and skin, immature. Same locality and collector. *Same history.*

7, *a*. 7, *b*. Skin and horns, and horns on part of skull. South Africa. *Presented by Dr. W. J. Burchell, about* 1817.

48. 7. 11. 3 (649, *d*). Horns. Orange River district. *Purchased* (*Argent*), 1848.

48. 7. 11. 1–2 (649, *b* and *c*). Two pairs of horns. Same locality. *Same history.*

51. 5. 5. 8–9 (649, *e* and *f*). Two skulls, female. Same locality. *Same history.*

51. 5. 5. 10 (649, *g*). Skull, with horns. Same locality. *Same history.*

51. 8. 26. 11. Skin, immature. Cape Colony. *Presented by Mrs. T. Baines*, 1851.

89. 2. 4. 3. Frontlet, with horns. Victoria district, Natal. *Presented by Morton Green, Esq.*, 1889.

94. 11. 4. 5. Skull, immature female. Barberton, De Kaap, Transvaal. *Presented by Dr. P. Rendall*, 1894.

96. 12. 5. 1. Frontlet, with horns, and skin. Black Umvolosi Valley, Swaziland. *Presented by W. R. Bowker, Esq.*, 1896.

4. 8. 51. 9. Skull and skin, female. Sibudeni, Zululand; collected by Mr. C. H. B. Grant. *Presented by C. D. Rudd, Esq.*, 1904.

5. 5. 7. 111. Skull and skin, immature female. Knysna, Cape Colony; same collector. *Same donor*, 1905.

8. 1. 1. 128. Skull and skin, female. Tambarara, Gorongoza, P. E. A.; same collector. *Same donor*, 1908.

8. 1. 1. 140. Skull and skin (scalp separate), female. Same locality and collector. *Same history.*

8. 1. 1. 146. Skull, imperfect, and skin, female. Same locality and collector. *Same history.*

II. TRAGELAPHUS ANGASI.

Tragelaphus angasi, *Angas*, *Proc. Zool. Soc.* 1848, p. 89, pls. iv and v; *Gray*, *ibid.* 1850, p. 144, *Knowsley Menagerie*, p. 27, 1850, *Cat. Ungulata Brit. Mus.* p. 138, 1852; *Proudfoot*, *Proc. Zool. Soc.* 1856, p. 199; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 246, 1862; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 174,

1869; *Brooke, Proc. Zool. Soc.* 1871, p. 485, 1878, p. 884; *Buckley, ibid.* 1876, p. 285; *Thomas, ibid.* 1891, p. 387, 1896, p. 798, 1897, p. 939; *Flower and Lydekker, Study of Mammals*, p. 347, 1891; *Sclater, Proc. Zool. Soc.* 1892, p. 98, 1893, p. 799; *Lydekker, Horns and Hoofs*, p. 352, 1893, *Game Animals of Africa*, p. 331, 1908; *Rendall, Proc. Zool. Soc.* 1895, p. 359, *Novit. Zool.* vol. v, p. 212, 1898; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897; *Selous, Great and Small Game of Africa*, p. 455, 1899; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 137, pl. xcii, 1900; *Pocock, Proc. Zool. Soc.* 1910, p. 930; *Ward, Records of Big Game*, ed. 6, p. 310, 1910, ed. 7, p. 308, 1914; *Letcher, Great Game N. E. Rhodesia*, p. 186, 1911.

Strepsiceros angasi, *Turner, Proc. Zool. Soc.* 1850, p. 171; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Euryceros angasi, *Gray, Cat. Ruminants Brit. Mus.* p. 48, 1872, *Hand-List Ruminants Brit. Mus.* p. 119, 1873.

Nyala angasi, *Heller, Smithson. Misc. Collect.* vol. lx, no. 8, p. 16, 1912.

NYALA, or INYALA.

Type of *Nyala*.

Typical locality St. Lucia Bay, Zululand.

Size medium, shoulder-height about 42 inches; nuchal and dorsal crest much longer than in preceding species, a profuse fringe of hair on throat and under-parts, and tail more bushy and longer; horns forming rather more than one complete turn; no white throat-band. General colour slaty grey, with a tinge of yellowish rufous; forehead rufous and orbital region fawn; upper lip and chin, two spots on cheek below each eye, an imperfect suborbital chevron, base of backs of ears, a chest-band, about fourteen more or less distinct transverse stripes on body, and a few spots low down on haunches, as well as a considerable proportion of the hairs in the dorsal crest, and the whole under surface of the tail, white; legs from just above knees and hocks to hoofs bright tan, with a patch on inner side of upper part of front pair, the inner sides of the knees, and the backs of the front-shanks, as well as the inner sides of the thighs and hocks, white; back of pasterns black; a pair of white spots on front of pasterns above hoofs.

Female bright chestnut, with a dark face-blaze, a whitish chevron, and about eleven transverse stripes and a few haunch-spots white; dorsal stripe black, intersected with white where crossed by transverse stripes; no long mane or fringes.

Skull with small orbits, facial portion of lachrymals long and narrow, lachrymal vacuities small, nasal processes of

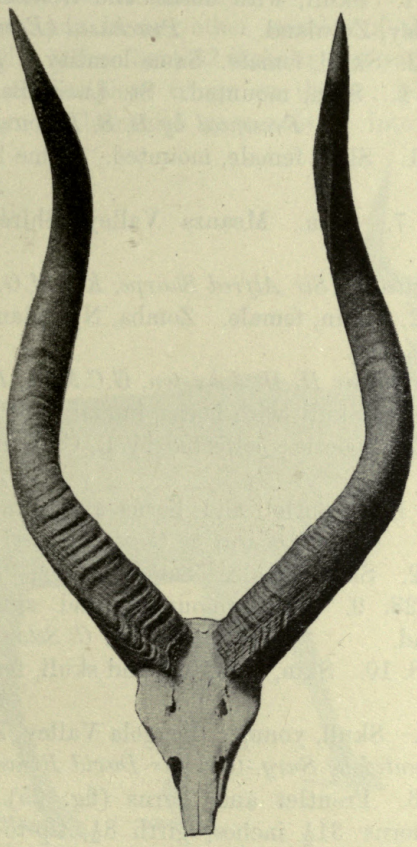

FIG. 25.—SKULL AND HORNS OF NYALA (*Tragelaphus angasi*).
From a photograph lent by Messrs. Rowland Ward, Ltd.

maxillæ broad at tip, and nasals notched on outer side of free extremity.

The range includes south-eastern Africa, from Zululand to Nyasaland.

1170, *c*. Single horn. Locality unknown. *No history.*

50. 8. 30. 1 (1170, *b*). Skull, with horns. Sixty miles up Maposta Valley, Amatongaland; collected by Mr. Proudfoot. *Purchased*, 1850.

50. 8. 30. 2. Skin, young female. Same locality and collector. *Same history.*

58. 4. 4. 1. Skull, with horns, and frontlet and horns. Pongola Valley, Zululand. *Purchased* (*Eastwood*), 1858.

58. 4. 4. 2. Skull, female. Same locality. *Same history.*

71. 9. 1. 1. Skin, mounted. St. Lucia Bay, Zululand. Topo-type. *Presented by R. S. Fellowes, Esq.*, 1871.

71. 9. 1. 1. Skin, female, mounted. Same locality. *Same history.*

92. 2. 6. 7. Skin. Moanza Valley, Shiré Highlands, Nyasaland.

Presented by Sir Alfred Sharpe, K.C.M.G., C.B., 1892.

93. 6. 5. 2. Skin, female. Zomba, Nyasaland; collected by A. Whyte, Esq.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1893.

93. 7. 25. 9. Skull, with horns, immature. Lake Mweru district, N. E. Rhodesia; collected by R. Crawshay, Esq. *Same history.*

95. 7. 6. 1. Frontlet and horns and skin. Manbana, Nyasaland. *Presented by Capt. G. Oliver, R.N.*, 1895.

95. 7. 6. 2. Skin, female. Same locality. *Same history.*

96. 11. 28. 9. Skin, mounted, and skull. British Amatongaland. *Presented by F. C. Selous, Esq.*, 1896.

96. 11. 28. 10. Skin, mounted, and skull, female. Same locality. *Same history.*

2. 2. 8. 4. Skull, young. Pengola Valley, Zululand.

Presented by Surg.-Gen. Sir David Bruce, C.B., 1902.

8. 3. 17. 3. Frontlet and horns (fig. 25). Zululand. Length of horns 31½ inches, girth 8½, tip-to-tip interval 12¾ inches. The "record" horns in Ward's 1910 list.

Presented by J. Rowland Ward, Esq., 1908.

III. TRAGELAPHUS BUXTONI.

Strepsiceros, *or* Tragelaphus, buxtoni, *Lydekker*, *Nature*, vol. lxxxiv, p. 397, 1910.

Tragelaphus buxtoni, *Lydekker*, *Field*, vol. cxxi, p. 798, 1910, *Proc. Zool. Soc.* 1911, p. 348, pl. xvi, *Game Animals of Africa*, *Suppl.* p. 17, 1911; *Ward*, *Records of Big Game*, ed. 6, p. 312, 1910, ed. 7, p. 310, 1914.

Mountain Nyala.

Typical locality Sahatu Mountains (9000 ft.), westward of the Arusi Plateau, Gallaland.

Size larger than in any other member of the genus, the shoulder-height being about 52 inches; coat rather long and coarse, with an incipient fringe on throat; general colour brownish fawn or brownish grey passing into dull tan in

Fig. 26.—Mountain Nyala (*Tragelaphus buxtoni*).

the region of the eyes, and becoming darker on nose and chocolate-brown on forehead above chevron; a short dark brown mane on neck, continued backwards as a brown and white dorsal crest; tail bushy, white beneath; ears moderately wide and tubular with white hairs on margins; chevron between and below eyes, a pair of spots on sides of face and another above neck, upper lip and chin, a gorget on throat and another on chest, a curved longitudinal band of nine spots on upper part of sides and in some cases an indistinct

transverse stripe on hind-quarters, a spot on upper part of thighs, inner surface of upper portion of fore-legs and of thighs, a patch on fore-legs below knees, extending on to outer and inner sides of limbs, but not reaching pasterns, a somewhat similar area on hind-legs, extending slightly above

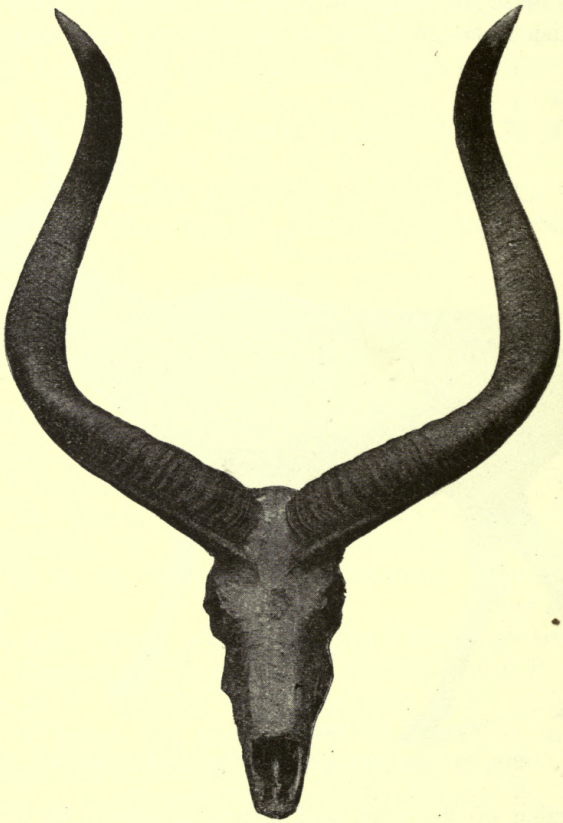

FIG. 27.—SKULL AND HORNS OF MOUNTAIN NYALA (*Tragelaphus buxtoni*).
From a photograph lent by Messrs. Rowland Ward, Ltd.

hocks, and a pair of oval spots on pasterns above hoofs white; under-parts rather lighter than back. Horns nyala-like, but heavier, obliquely ridged at bases, divergent, with an open spiral, forming about one complete turn and a quarter, with smooth yellow-tipped terminal portion. In the type the horns measure 37 inches in length and 9¼ in

basal girth, with a tip-to-tip interval of 21 inches, but in an older specimen the corresponding dimensions are respectively 39, 9¾, and 22 inches.

10. 11. 29. 1. Skin, subadult, mounted. Sahatu Mountains, Arusi Gallaland. Type (fig. 26).

Presented by Ivor Buxton, Esq., 1910.

12. 12. 2. 1. Skull, with horns. Same locality.

Presented by J. Rowland Ward, Esq., 1912.

14. 5. 7. 1. Two body-skins. Same locality.

Presented by Messrs. Rowland Ward, Ltd., 1914.

2. Subgenus **LIMNOTRAGUS.**

Hydrotragus, *Gray*, *Cat. Ruminants Brit. Mus.* p. 49, 1872, nec *Fitzinger*, 1866.

Limnotragus, *Sclater and Thomas*,* *Book of Antelopes*, vol. iv, pp. 90 and 108, 1900; *Pocock*, *Proc. Zool. Soc.* 1910, p. 930; *Heller*, *Smithson. Misc. Collect.* vol. lx, no. 8, p. 16, 1912.

Hoofs elongated, backs of pasterns bare.

The range includes the Congo Valley and the neighbourhood of the great lakes of southern and eastern Africa, extending northwards to Tanganyika and the Bahr-el-Ghazal, and southwards to the Chobi and Zambesi.

IV. TRAGELAPHUS (LIMNOTRAGUS) SPEKEI.

Tragelaphus spekei, *Sclater*, in Speke's *Journal of Discovery*, p. 223, 1863, *Proc. Zool. Soc.* 1864, p. 103, pl. xii, 1880, p. 452, 1883, p. 34; *Heuglin*, *Reise Weiss. Nil*, p. 319, 1869; *Peters*, *Mitt. Ak. Berlin*, 1876, p. 484; *Brooke*, *Proc. Zool. Soc.* 1871, p. 485, 1878, p. 884; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 83, 1887; *Thomas*, *Proc. Zool. Soc.* 1891, p. 388; *Flower and Lydekker*, *Study of Mammals*, p. 347, 1891; *Ward*, *Records of Big Game*, p. 155, 1892; *Lydekker*, *Horns and Hoofs*, p. 254, 1893; *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 311, 1894; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 135, 1895; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, p. 78, 1897; *Rothschild*, *Novit. Zool.* vol. v, p. 206, 1898; *Gedge*, *Great and Small Game of Africa*, p. 476, 1899; *Letcher*, *Big Game N. E. Rhodesia*, p. 203, 1911; *Roberts*, *Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Eurycerus (Hydrotragus) spekii, *Gray*, *Cat. Ruminants Brit. Mus.* p. 49, 1872.

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* In this portion of the work the place of Mr. Thomas was taken by Mr. Pocock.

Eurycerus spekii, *Gray, Hand-List Ruminants Brit. Mus.* p. 119, 1873.
Limnotragus spekii, *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 151, pl. xciii, 1900; *Roosevelt, African Game Trails*, p. 486, 1910.
Tragelaphus speekei, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1905, p. 90.
Tragelaphus (Limnotragus) spekei, *Lydekker, Great and Small Game of Africa*, p. 335, 1908; *Ward, Records of Big Game*, ed. 6, p. 313, 1910, ed. 7, p. 312, 1914; *Matschie, Beröff. Inst. Jagdkunde*, vol. ii, p. 179, 1913.

Typical locality Victoria Nyanza; the range is co-extensive with that of the genus.

Size medium; shoulder-height from about 32 to 42 inches. Male with a heavy fringe on throat and under-parts, a long, coarse coat, and horns (fig. 28) of the short, open-spiralled type of *T. angasi*, but frequently developing more than two complete turns of a spiral; general colour varying from greyish brown to rich nearly chocolate brown, with a gorget on throat and another on chest, and face and limb markings generally similar to those of *T. angasi*; sexes unlike or like in colour.

The skull has the small orbits and narrow lachrymals of *T. angasi*.

The four local races are distinguishable as follows:—

A. Sexes unlike in colour.
  a. Size smaller ..... *T. s. spekei.*
  b. Size larger.
    a'. Frontal chevron small ..... *T. s. gratus.*
    b'. Frontal chevron large ..... *T. s. albonotatus.*
B. Sexes alike in colour, size larger ..... *T. s. selousi.*

A.—Tragelaphus spekei spekei.

Tragelaphus spekei spekei, *Rothschild, Novit. Zool.* vol. v, p. 206, 1898.
Tragelaphus spekei typicus, *Ward, Records of Big Game*, ed. 6, p. 314, 1910, ed. 7, p. 313, 1914.
(?) Tragelaphus (Limnotragus) spekei ugallæ, *Matschie, Beröff. Inst. Jagdkunde*, vol. ii, p. 179, 1913.

Typical locality the Victoria Nyanza; the range extending nearly to the Zambesi.

Size small, shoulder-height about 36 inches; sexes dissimilar in colour. General colour nearly uniform

greyish brown, becoming greyer on sides of neck; a dark line running from nape of neck to withers, replaced posteriorly by a white dorsal stripe; a few pale spots on lower part of hind-quarters, and a faint band of same on flanks, with, in some cases, traces of vertical stripes; legs deeper coloured than body, inner sides of knees and fore-shanks and fronts of hocks paler; hoof-spots scarcely visible. Good horns range from about 32 to 35½ inches in length along the curve, with a basal girth of from 7½ to 8⅝, and a tip-to-tip interval of from 7¾ to 26 inches.

T. s. ugallæ, from Ugalla, German East Africa, is stated to differ by its more bent horns.

63. 7. 7. 2. Skin, young, mounted. Karagwé, Victoria Nyanza. *Presented by Capt. J. H. Speke*, 1863.

63. 7. 7. 3. Skull, young. Same locality. *Same history.*

63. 7. 7. 4. Frontlet and horns. Same locality. Type. *Same history.*

94. 3. 14. 1. Skin. Uganda; collected by E. Gedge, Esq. *Presented by J. Rowland Ward, Esq.*, 1894.

0. 10. 3. 4–5. Two skulls, female. Left bank of Linyanti Valley, B. E. Africa. *Presented by P. C. Reid, Esq.*, 1900.

0. 10. 3. 6. Skull, with horns, young. Same locality. *Same history.*

5. 4. 3. 6. Skull, with horns, and skin, immature. Kaguiga Island, Uganda. *Presented by Lieut.-Col. C. Delmé-Radcliffe*, 1905.

5. 4. 3. 7. Skull and skin, female. Same locality. *Same history.*

5. 4. 3. 8. Skull and skin, immature female, Mesogi Island, Kagera River, Buddu. *Same history.*

5. 4. 3. 9. Skin, immature. Mouth of Kagera Valley. *Same history.*

5. 4. 3. 10–11. Two skins. South-west Ankoli. *Same history.*

5. 4. 3. 12. Frontlet and horns. Same locality. *Same history.*

13. 3. 1. 7. Skin. Same locality. *Presented by Sir F. J. Jackson, K.C.M.G., C.B.*, 1913.

13. 3. 1. 8. Skin, female. Same locality. *Same history.*

B.—Tragelaphus spekei gratus.

Tragelaphus gratus, *Sclater*, *Proc. Zool. Soc.* 1880, p. 452, pl. xliv, 1883, p. 34, 1889, p. 220; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 275, 1887; *Thomas*, *Proc. Zool. Soc.* 1891, p. 387; *Flower and Lydekker*, *Study of Mammals*, p. 347, 1891; *Lydekker*, *Horns and Hoofs*, p. 254, 1893; *O. Neumann*, *Sitzber. Ges. nat. Freunde*, 1905, p. 90.

Tragelaphus spekei gratus, *Rothschild*, *Novit. Zool.* vol. v, p. 206, 1898; *Lydekker*, *Game Animals of Africa*, p. 236, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 316, 1910, ed. 7, p. 315, 1914.

Limnotragus gratus, *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 165, pl. xcv, 1900; *Elliot*, *Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 87, 1907; *Pocock*, *Proc. Zool. Soc.* 1910, p. 930.

NAKONG.

Typical locality Gabun.

Larger than typical race (shoulder-height about 40 inches), with the coat shorter; general colour rich, nearly chocolate, brown, becoming blackish on front of face, under-parts, and limbs, and marked with a lateral band of indistinct white spots, five or six more or less defined whitish transverse body-stripes, with numerous white or whitish spots, dorsal streak, and a few spots on haunches white; white patches on fore-legs behind and below knees and on hind-legs in front of and below hocks, and large white spots on front of pasterns above hoofs in both pairs. Female smaller, rich chestnut red, darker above than below, and marked like male, with the exception that the dorsal line is black, and that there are no white spots on front of pasterns above hoofs.

The range extends on the West Coast from the Cameruns to the Congo.

48. 11. 20. 14. Pair of horns. Kokki, Cameruns. Noticed in *Proc. Zool. Soc.* June 13, 1848, without definite name. *Presented by Capt. W. Allen, R.N.*, 1848.

52. 2. 26. 30. Two single horns. Gabun. *Purchased* (*Parzudaki*), 1852.

65. 5. 9. 20. Skin and horns. Gabun; collected by Monsieur P. B. du Chaillu. *Purchased*, 1865.

82. 7. 24. 11. Head, mounted, body-skin, and skull. Gabun. *Purchased* (*Gerrard*), 1882.

83. 4. 28. 1. Skin, female. Gabun. Type.
Presented by Dr. P. L. Sclater, 1883.
8. 4. 24. 4. Two miles east of Benguella.
Presented by Dr. C. H. Wellman, 1908.

C.—Tragelaphus spekei albonotatus.

Tragelaphus gratus albonotatus, *O. Neumann, Sitzber. Ges. nat. Freunde*, 1905, p. 90.
Tragelaphus spekei albonotatus, *Lydekker, Game Animals of Africa*, p. 337, 1908.

Typical locality unknown; possibly either Upper Guinea or Angola.

Type formerly living in Berlin Zoological Gardens.

Stated to differ from *gratus* by the longer and wider frontal chevron, which extends upwards to the horns, the broader and more distinct white lines on the sides of the nose, between which and the white spot below the outer angles of the eyes is a broad yellow band bordering the eyelids, the white ear-tips, the paler limbs, and the larger amount of white above the hoofs and on the hind-legs and thighs.

No specimen in collection.

D.—Tragelaphus spekei selousi.

Tragelaphus spekei, *Sclater, Proc. Zool. Soc.* 1864, p. 103, pl. xii, 1890, p. 590, pl. xlvii; *Kirk, ibid.* 1864, p. 657; *Brooke, ibid.* 1871, p. 485; *Selous, ibid.* 1881, p. 753, *Great and Small Game of Africa*, p. 470, 1899, *Proc. Zool. Soc.* 1891, p. 388; *Nicholls and Eglington, Sportsman in S. Africa*, p. 40, 1892.
Tragelaphus selousi, *Rothschild, Novit. Zool.* vol. v, p. 206, 1898; *Rendall, ibid.* p. 215; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 937, 1900.
Limnotragus selousi, *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 157, pl. xciv, 1900.
Tragelaphus spekei selousi, *Lydekker, Game Animals of Africa*, p. 357, 1908; *Ward, Records of Big Game*, ed. 6, p. 314, 1910, ed. 7, p. 312, 1914.
Limnotragus gratus selousi, *Pocock, Proc. Zool. Soc.* 1910, p. 931.

Situtunga, or Sitatunga.

Typical locality Zambesi Valley.

Type, none mentioned in original description.

Size approximately as in *gratus* (42 inches at shoulder);

general colour bright greyish brown, with a chevron on nose, a patch below each eye, another on throat, base of ears, lower lip and chin, and inside of knees white; females rather darker with little or no white on face and throat. The

FIG. 28.—HEAD OF ZAMBESI SITUTUNGA (*Tragelaphus* [*Limnotragus*] *spekei selousi*).

longest recorded horns (Lake Mweru) measure 35⅞ inches on curve.

The range includes all that part of the range of the species lying to the south of the Zambesi Valley.

56. 10. 7. 1 (1990, *d*). Frontlet and horns, young. Lake Ngami. *Presented by J. A. Green, Esq.*, 1856.

56. 10. 7. 1* (1990, *e*). Frontlet and horns. Same locality. *Same history.*

60. 2. 11. 14. Skull, with horns, and skin. Zambesi Valley; collected by J. Chapman, Esq.

Purchased (*Verreaux*), 1860.

81. 10. 28. 8. Horns and feet. Chobi Valley.

Presented by F. C. Selous, Esq., 1881.

81. 10. 28. 9. Horns. Same locality. *Same history.*

93. 7. 25. 10. Frontlet and horns. Lake Mweru, N. W. Rhodesia; collected by R. Crawshay, Esq.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1893.

4. 9. 25. 2. Skin, female. Barotsiland.

Presented by J. Rowland Ward, Esq., 1904.

5. 2. 13. 1. Skull and skill, female. Lake Ngami. Co-type. *Presented by the Zoological Society*, 1905.

6. 8. 3. 2–3. Two frontlets and horns. South Africa.

Presented by J. Kenny, Esq., 1906.

7. 7. 12. 1. Skin, mounted, immature (fig. 28). Zambesia.

Presented by Lieut.-Col. J. Hannington, 1907.

8. 5. 10. 1. Skull, with horns, and skin (head-skin separate). Isapa Swamp, south end of Lake Tanganyika.

Presented by R. L. Harper, Esq., 1908.

10. 7. 15. 1. Skull and skin, female. Okovango Marshes.

Presented by H. Hannay, Esq., 1910.

13. 11. 27. 2. Skull, with horns, immature and imperfect, and skin. Lungo Valley, Lake Mweru district, N. W. Rhodesia. *Presented by O. E. Wynne, Esq.*, 1913.

13. 11. 27. 3. Skull and skin, female. Same locality.

Same history.

II. Genus STREPSICEROS.

Strepsiceros, *H. Smith*, *Griffith's Animal Kingdom*, vol. v, p. 365, 1827; *Rütimeyer*, *Abh. schweiz. pal. Ges.* vol. v, p. 73, 1878; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 171, 1900; *Pocock*, *Proc. Zool. Soc.* 1910, p. 931.

Calliope, *Ogilby*, *Proc. Zool. Soc.* 1836, p. 138.

Ammelaphus, *Heller*, *Smithson. Misc. Collect.* vol. lx, no. 8, p. 15, 1912.

Closely allied to *Tragelaphus*, but the hind surface of the bases of the horns, with a scarcely appreciable external keel,

and the horn-spiral typically more open and forming at least two-and-a-half complete turns. Sexes nearly alike in coloration; tail thickly haired, as in most species of *Tragelaphus*.

The range includes eastern and southern Africa from Abyssinia and Somaliland to Cape Colony, and thence along the western side of the continent as far north as the Congo.

The two existing species are distinguishable as follows:—

A. Size very large; horns with a very open spiral; throat tufted in male..... *S. strepsiceros.*

B. Size relatively small; horns with a closer spiral; throat smooth..... *S. imberbis.*

I. STEPSICEROS IMBERBIS.

Strepsiceros imberbis, *Blyth*, *Proc. Zool. Soc.* 1869, p. 55; *Sclater*, *ibid.* 1878, p. 441, 1884, pp. 45 and 439, pl. iv, 1892, pp. 102 and 118; *Phillips*, *ibid.* 1885, p. 931; *Huet*, *Bull. Soc. Acclim.* ser. 4, vol. iv, p. 76, 1887; *Hunter*, *Willoughby's Great Game of East Africa*, p. 288, 1889; *Jentink*, *Notes Leyden Mus.* vol. xii, p. 211, 1890, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 172, 1892; *Flower and Lydekker*, *Study of Mammals*, p. 348, 1891; *Inverarity*, *Journ. Bombay Nat. Hist. Soc.* vol. vi, p. 465, pl. 1891, *Great and Small Game of Africa*, p. 451, 1899; *Ward*, *Records of Big Game*, p. 163, 1892, ed. 6, p. 323, 1910, ed. 7, p. 321, 1914; *Swayne*, *Proc. Zool. Soc.* 1892, p. 302; *Lydekker*, *Horns and Hoofs*, p. 252, 1893, *Game Animals of Africa*, p. 349, 1908; *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 304, 1894, *Proc. Zool. Soc.* 1897, p. 454; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 137, 1895, *Werther's Die mittl. Hochländ. Deutsch-Ostafrika*, p. 255, 1898; *Elliot*, *Zool. Pub. Field Mus.* vol. i, p. 134, 1897, *Cat. Mamm. Field Mus.* (*op. cit.* vol. viii) p. 88, 1907; *Pousargues*, *Ann. Sci. Nat.*, *Zool.* ser. 7, vol. iv, p. 81, 1897; *de Winton*, *Proc. Zool. Soc.* 1898, p. 768; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 185, pl. xcvii, 1900; *Rothschild*, *Powell-Cotton's Sporting Trip through Abyssinia*, p. 477, 1902; *Powell-Cotton*, *Unknown Africa*, p. 575, 1904; *Pocock*, *Proc. Zool. Soc.* 1905, vol. i, p. 141; *Drake-Brockman*, *Mammals of Somali.* p. 95, 1910.

Strepsiceros tendal, *Gray*, *Hand-List Ruminants Brit. Mus.* p. 118, 1873, nec *Cretzschmar.*

Ammelaphus imberbis, *Heller*, *Smithson. Misc. Collect.* vol. lx, no. 8, p. 15, 1912, vol. lxi, no. 13, p. 2, 1913.

Lesser Kudu.

Type of *Ammelaphus.*

Typical locality Somaliland.

Size relatively small, shoulder-height about 40 inches;

horns (fig. 29) forming a narrow close spiral, with distinct rings; no throat-fringe, but a white gorget on throat and another on chest; general deep yellowish grey, becoming blackish on muzzle, cheeks, under surface of lower jaw, and under-parts; upper lip and chin, one or two spots on cheeks,

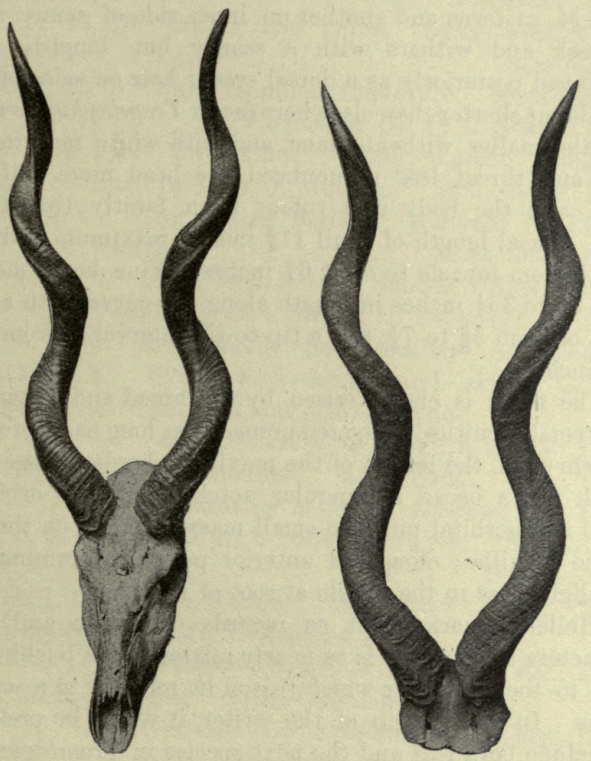

FIG. 29.—SKULL AND HORNS (*A*) AND FRONTLET AND HORNS (*B*) OF LESSER KUDU (*Strepsiceros imberbis*).

and a chevron on nose white; ears whitish at base and on front of margins; a black nuchal stripe from occiput to withers, continued as a white one to root of tail; body marked with from eleven to fourteen transverse white stripes, the first crossing shoulders, and the last, which is very short, close to tail, the tail itself being black at tip and white beneath; fore-legs grey superiorly, but rich fawn from above

knees to hoofs, with a large patch on inner side of upper part and another behind the knees white, and a black patch on inner surface above knees; shanks and pasterns black behind, the latter with or without a pair of white spots above hoofs in front; fronts of thighs and inner sides of hind-legs white, rest of hind-legs bright fawn, except for a white patch on front of pasterns and another on inner side of same. Nape of neck and withers with a scanty but longish mane, continued posteriorly as a dorsal crest; hair on sides of neck and throat shorter than elsewhere (as in *Tragelaphus scriptus*). Female smaller without mane, and with white markings on head and throat less pronounced, the head more uniformly fawn, and the body rich rufous fawn, faintly tinged with grey. Basal length of skull 11¾ inches, maximum width 4¼, length from muzzle to orbit 6¾ inches. Fine horns measure from 30 to 35¼ inches in length along the curve, with a basal girth of from 5⅜ to 7¼, and a tip-to-tip interval of from 9½ to 15¾ inches.

The skull is characterised by the broad and rectangular lachrymal vacuities, elongated premaxillæ, long nasal processes of lachrymal, the length of the maxillary border of the jugal, which has a broad rectangular notch below the orbit, the small supraorbital pits, the small masseter knob on the sides of the maxillæ; elongated anterior palatine foramina; and the slight boss in the profile at root of nasals.

Heller remarks that as regards coloration and skull-characters this species is as nearly related to the bushbuck as it is to the kudu, for which reason he refers it to a separate genus. In the opinion of the writer, it would be preferable to include both this and the next species in *Tragelaphus*.

The range extends from Somaliland and Abyssinia to B. E. Africa.

A.—Strepsiceros imberbis imberbis.

Typical locality Somaliland.

General colour relatively pale, a white spot on front of fore-pasterns, horns proportionately long.

61. 2. 30. 10. Skin, mounted. Somaliland. Type.
Transferred from India Museum, 1861.

74. 4. 20. 4. Skin, immature. Southern Somaliland; collected by Sir John Kirk, G.C.M.G., K.C.B. *Purchased*, 1874.

74. 4. 28. 8. Pair of horns. Juba Valley; same collector. *Same history.*

79. 11. 12. 14. Skull and horns. Same locality and collector. *Purchased*, 1879.

79. 11. 12. 15. Skull and horns. Same locality and collector. *Same history.*

84. 11. 25. 1. Skin, mounted, immature. Somaliland. *Presented by Dr. P. L. Sclater*, 1884.

86. 1. 25. 2–3. Two skins. High plateau south of Berbera; collected by Herr J. Menges. *Same donor*, 1886.

92. 2. 5. 6. Skin. Near Berbera; collected by Lieut.-Col. H. G. C. Swayne. *Same donor*, 1892.

93. 6. 30. 2. Skull, with horns. Shebeli Valley, Somaliland. *Presented by Gen. Sir A. H. Paget, G.C.B.*, 1893.

93. 6. 30. 9. Skin, female. Same locality. *Same history.*

93. 12. 1. 4. Skull, with horns, and skin. Central Somaliland; collected by Lieut.-Col. Swayne. *Presented by Dr. P. L. Sclater*, 1893.

98. 6. 9. 18. Skin, mounted. Somaliland. *Presented by R. Mc. D. Hawker, Esq.*, 1898.

98. 6. 9. 19. Skull, with horns, immature. Somaliland. *Same history.*

6. 11. 1. 68. Skin, female. Lake Zuay (Zwei). N. E. Africa; collected by Mr. P. Zaphiro. *Presented by W. N. McMillan, Esq.*, 1906.

12. 12. 2. 4. Skin. Arusi-Gallaland. *Presented by J. Rowland Ward, Esq.*, 1912.

12. 12. 26. 2. Skin. Gadabursi, Somaliland. *Presented by F. R. Roberts, Esq.*, 1912.

B.—Strepsiceros imberbis australis.

Ammelaphus imberbis australis, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 13, p. 2, 1913.

Typical locality Longaya watering-place, Marsabit district, British East Africa.

Type in U.S. National Museum, Washington.

Stated to differ from typical race by darker general colour

(bright ochery tawny), absence of white spot on front of fore-pasterns, and shorter horns,

97. 6. 21. 1. Skin, mounted, female. East Africa; collected by Sir F. J. Jackson, K.C.M.G., C.B. Faint traces of spots on front pasterns are noticeable.

Presented by J. Rowland Ward, Esq., 1897.

1. 4. 3. 4. Skull, with horns, young. German East Africa. *Presented by J. Rowland Ward, Esq.*, 1901.

II. STREPSICEROS STREPSICEROS.

Antilope strepsiceros, *Pallas*, *Misc. Zool.* p. 9, 1766, *Spicil, Zool.* fasc. i, p. 17, 1767, xii, pp. 19 and 69, 1777; *Erxleben*, *Syst. Regn. Anim.* p. 282, 1777; *Zimmermann*, *Spec. Zool. Geogr.* p. 542, 1777, *Geogr. Geschich.* vol. ii, p. 115, 1780; *Gatterer*, *Brev. Zool.* pt. i, p. 81, 1780; *Schreber*, *Säugthiere*, pl. cclxvii, 1784; *Boddaert*, *Elenchus Anim.* p. 142, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 192, 1788; *Pennant*, *Quadrupeds*, vol. i, p. 77, 1781, p. 88, pl. xiv, 1793; *Kerr*, *Linn.'s Anim. Kingdom*, p. 319, 1792; *Donndorff*, *Zool. Beiträge*, vol. i, p. 643, 1792; *Link*, *Beyträge Naturgesch.* vol. ii, p. 99, 1795; *Cuvier*, *Tabl. Élém. Hist. Nat.* p. 164, 1798, *Règne Anim.* vol. i, p. 263, 1817, *Dict. Sci. Nat.* vol. ii, p. 246, 1804; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 334, fig. 185, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 116, 1802; *Desmarest*, *Nouv. Dict. Hist. Nat.* vol. vi, p. 129, 1803; *Tiedemann*, *Zool.* vol. i, p. 410, 1808; *Thunberg*, *Mém. Ac. Sci. St. Pétersb.* vol. iii, p. 317, 1811; *G. Fischer*, *Zoognosia*, vol. iii, p. 439, 1814; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Burchell*, *List Quadrupeds presented to Brit. Mus.* p. 7, 1817, *Travels in S. Africa*, vol. i, pp. 337 and 374, 1822; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1207, 1818; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 396, 1821, *Synop. Mamm.* vol. ii, p. 430, 1845, *Mon. Antilop.* p. 28, pl. xxxi, 1848; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 447, 1822; *J. B. Fischer*, *Synop. Mamm.* p. 471, 1829; *Rüppell*, *Neue Wirbelth. Abyssin.* p. 26, 1835–40; *Lesson*, *Hist. Nat. Mamm.* vol. x, p. 303, 1836; *Masson*, *Cuvier's Règne Anim.* vol. i, p. 317, 1836; *Owen*, *Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 634, 1868; *Waterhouse*, *Cat. Mus. Zool. Soc.* p. 42, 1838; *Forster*, *Descrip. Anim.* pp. 36 and 377, 1844; *Reichenbach*, *Säugethiere*, vol. iii, p. 145, 1845; *Drummond*, *Large Game S. Africa*, p. 425, 1875.

Ovis strepsiceros, *Müller*, *Linn.'s Natursyst.* vol, i, p. 429, pl. xxvi, figs. 1 and 2, 1773; *nec* Linn.

Capra strepsiceros, *Thunberg*, *Resa*, vol. ii, p. 100, 1789, *English Transl.* of same, vol. ii, p. 89, 1793.

Antilope (Gazella) strepsiceros, *Lichtenstein*, *Mag. Nat. Freunde*, vol. vi, p. 172, 1814.

Cerophorus (Tragelaphus) strepsiceros, *Blainville*, *Bull. Soc. Philom.* 1816, p. 75.

Antilope (Tragelaphus) strepsiceros, *Desmarest, Dict. Hist. Nat.* ed. 2, vol. ii, p. 197, 1816, *Mammalogie*, p. 468, 1822; *Lesson, Man. Mamm.* p. 383, 1827, *Nouv. Tabl. Règne Anim., Mamm.* p. 181, 1842; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 266, 1840; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 445, 1844, vol. v, p. 440, 1855; *Giebel, Säugethiere*, p. 311, 1853–55.

Damalis strepsiceros, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 359, 1827.

Damalis (Strepsiceros) strepsiceros, *H. Smith, op. cit.* vol. v, p. 365, 1827.

Strepsiceros strepsiceros, *Smuts, Enum. Mamm. Cap.* p. 92, 1832; *Peters, Reise nach Mossambique*, p. 190, 1852; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 140, 1887, *Notes Leyden Mus.* vol. ix, p. 173, 1887, *Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 172, 1892; *Rendall and Rothschild, Novit. Zool.* vol. v, p. 212, 1898; *Matschie, Werther's Die mittl. Hochländ. Deutsch-Ostafrika*, p. 254, 1898; *de Winton, Proc. Zool. Soc.* 1898, p. 768; *Rothschild, Powell-Cotton's Sporting Trip through Abyssinia*, p. 477, 1902; *Elliot, Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 88, 1907; *Roosevelt, African Game Trails*, p. 486, 1910; *Pocock, Proc. Zool. Soc.* 1910, p. 937; *Roberts, Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Strepsiceros capensis, *A. Smith, S. African Quart. Journ.* vol. ii, p. 223, 1834; *Harris, Wild Animals S. Africa*, p. 103, pl. xx, 1840; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 173, pl. xcvi, 1900; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 241, 1900; *Lydekker, Game Animals of Africa*, p. 341, 1908; *Ward, Records of Big Game*, ed. 6, p. 318, 1910, ed. 7, p. 316, 1914; *Letcher, Big Game N. E. Rhodesia*, p. 188, 1911.

Calliope strepsiceros, *Ogilby, Proc. Zool. Soc.* 1836, p. 138; *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 181, 1842.

Strepsiceros koodoo, *Jardine, Naturalist's Libr., Mamm.* vol. iv, p. 180, pl. xx, 1836; *Letcher, Big Game N. E. Rhodesia*, p. 188, 1911.

Strepsiceros kudu, *Gray, List Mamm. Brit. Mus.* p. 155, 1843, *List Osteol. Brit. Mus.* p. 59, 1847, *Proc. Zool. Soc.* 1850, p. 143, *Knowsley Menagerie*, p. 26, pl. xxiv, fig. 2, 1850, *Ann. Mag. Nat. Hist.* ser. 2, vol. viii, p. 225, 1851, *Cat. Ungulata Brit. Mus.* p. 133, 1852, *Cat. Ruminants Brit. Mus.* p. 46, 1872, *Hand-List Ruminants Brit. Mus.* p. 117, 1873; *Gervais, Hist. Nat. Mamm.* vol. ii, p. 200, 1855 (coudou); *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 245, 1862; *Sclater, Proc. Zool. Soc.* 1864, p. 105, 1884, p. 47, 1892, pp. 102 and 118; *Kirk, ibid.* 1864, p. 659; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 176, 1869; *Blanford, Zool. Abyssinia*, p. 270, 1870; *Buckley, Proc. Zool. Soc.* 1872, p. 454, 1876, pp. 284 and 291; *Garrod, ibid.* 1877, p. 4; *Bocage, ibid.* 1878, p. 745; *Brehm, Thierleben, Säugethiere*, vol. iii, p. 227, 1880; *Selous, Proc. Zool. Soc.* 1881, p. 751, *A Hunter's Wanderings in S. Africa*, p. 207, 1881, *Great and Small Game of Africa*, p. 441, 1899; *Johnston, Proc. Zool. Soc.* 1884, p. 542; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 258, 1884; *Phillips, Proc. Zool. Soc.* 1885, p. 931; *Hunter, Willoughby's Great Game of E. Africa*, p. 287, 1889; *Bryden, Kloof and Karroo*, p. 291, 1889, *Nature and Sport in*

S. Africa, p. 241, 1897; *Crawshay*, *Proc. Zool. Soc.* 1890, p. 659; *Jentink*, *Mus. Pays-Bas*, vol. xii, p. 211, 1890; *W. L. Sclater*, *Cat. Mamm. Ind. Mus.* pt. ii, p. 153, 1891; *Flower and Lydekker*, *Study of Mammals*, p. 348, 1891; *Inverarity*, *Journ. Bombay Nat. Hist. Soc.* vol. vi, p. 463, 1891, *Great and Small Game of Africa*, p. 445, 1899; *Nicholls and Eglington*, *Sportsman in S. Africa*, p. 52, 1892; *Swayne*, *Proc. Zool. Soc.* 1892, p. 301, *Seventeen Trips to Somaliland*, p. 302, 1895; *Lydekker*, *Horns and Hoofs*, p. 25, 1893, *Great and Small Game of Africa*, p. 440, 1899; *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 288, 1894, *Proc. Zool. Soc.* 1897, p. 454; *Thomas*, *Proc. Zool. Soc.* 1894, p. 145, 1896, p. 798; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 136, 1895; *Pousargues*, *Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897; *Elliot*, *Field Mus. Zool. Pub.* vol. i, p. 132, 1900; *de Winton*, *Proc. Zool. Soc.* 1900, p. 83; *Powell-Cotton*, *Unknown Africa*, p. 574, 1904; *Drake-Brockman*, *Mammals of Somali.* p. 92, 1910.

Strepsiceros excelsus, *Sundevall*, *K. Svenska Vet.-Ak. Handl.* 1844, p. 196, 1846.

Damalis (Strepsiceros) capensis, *A. Smith*, *Illustr. Zool. S. Africa*, pl. xii, 1859.

Antilope (Addax) strepsiceros, *Laurillard*, *Dict. Univ. Hist. Nat.* vol. i, p. 620, 1861.

Tragelaphus strepsiceros, *Heuglin*, *Reise Weiss. Nil*, p. 319, 1869, *Reise Nordost-Afrika*, p. 113, 1877.

Strepsiceros strepsiceros zambesiensis, *Lorenz*, *Ann. Hof. Mus. Wien*, vol. ix, *Notizen*, p. 62, 1894.

(?) Antilope torticornis, *Hermann*, *Obs. Zool.* pt. i, p. 87, 1804.*

Kudu (Koodoo), or Koedoe.

The type species.

Size very large (shoulder-height from about 50 to 52 inches); throat without white gorget, but heavily fringed; and horns forming a much more open spiral than in preceding species. General colour ranging from reddish fawn to (in old animals) pale bluish grey; neck brown at base and darker than shoulder; head darker than fore part of neck, with a whitish area round each eye, and an infra-orbital chevron, two or three spots on each side of cheeks, edges of upper lips, and chin and under surface of lower jaw white; a thickish fringe of white and blackish brown hairs extending from middle of under surface of lower jaw to lower part of throat, which lacks a white gorget; neck and withers with a brown mane, continued posteriorly as a white fringe to root of tail; sides of body and haunches marked with from about four to nine or ten vertical white stripes; tail

* *Vide* "Book of Antelopes," vol. iv, p. 175.

white below with a black tip; under-parts greyish, tending to black in middle; legs rich fawn to knees and hocks, the front pair whitish on inner side at origin and behind knees, as well as on inner and hind aspects of shanks, with a pale blackish brown patch on inner side above knees, and the pasterns black behind, with faint traces of a pair of white

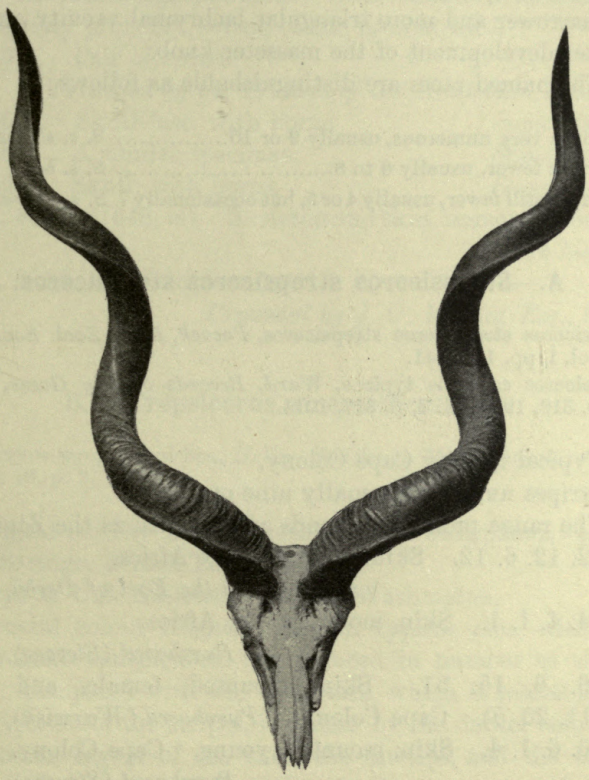

Fig. 30.—Skull and Horns of Kudu (*Strepsiceros strepsiceros*).

spots above the hoofs in front; in hind pair the inner side of the upper portion of the thighs and the front surface down to the hocks white, this gradually dying out between the hocks and pasterns. Basal length of skull (in southern race) about 15 inches, interval between orbit and muzzle 9, and maximum width about 6⅜ inches. Horns with an open spiral; fine examples measure from 55 to 61 inches in length

along the curve, with a basal girth of from 10 to 14, and a tip-to-tip interval of from 19 to 48¼ inches.

In females the general colour is nearly uniform fawn, rather darker above than below; in the young the colour is redder than in the adult, with the white markings more pronounced.

The skull differs from that of the preceding species by the narrower and more triangular lachrymal vacuity and the greater development of the masseter knob.

The named races are distinguishable as follows:—

A. Stripes very numerous, usually 9 or 10..... *S. s. strepsiceros.*
B. Stripes fewer, usually 6 to 8..... *S. s. bea.*
C. Stripes still fewer, usually 4 or 5, but occasionally 7 *S. s. chora.*

A.—Strepsiceros strepsiceros strepsiceros.

Strepsiceros strepsiceros strepsiceros, *Pocock*, *Proc. Zool. Soc.* 1905, vol. i, pp. 140, 141.
Strepsiceros capensis typicus, *Ward*, *Records of Big Game*, ed. 6, p. 319, 1910, ed. 7, p. 317, 1914.

Typical locality Cape Colony.

Stripes numerous, usually nine or ten.

The range probably extends as far north as the Zambesi.

42. 12. 6. 12. Skin, mounted. S. Africa.
Presented by the Earl of Derby, 1842.

44. 4. 1. 1. Skin, mounted. S. Africa.
Purchased (*Stevens*), 1844.

46. 6. 15. 31. Skin, mounted, female, and skull (46. 11. 20. 5). Cape Colony. *Purchased* (*Warwick*), 1846.

46. 6. 1. 4. Skin, mounted, young. Cape Colony.
Purchased (*Stevens*), 1846.

48. 7. 11. 1. Skull, with horns. Probably South African. *Purchased*, 1848.

60. 4. 22. 1. Skull, with horns, immature. S. Africa.
Purchased (*Stevens*), 1860.

91. 7. 20. 1. Frontlet and horns, immature. Interior of Natal. *Purchased* (*Stevens*), 1891.

93. 4. 2. 1. Skin, mounted. Macloutsie Valley, Upper Limpopo. *Presented by F. C. Selous, Esq.*, 1893.

5. 5. 18. 1. Skin, Zululand.

Presented by Surg.-Gen. Sir D. Bruce, C.B., 1905.

10. 6. 10. 5. Skull, with horns. Angola.

Presented by Dr. W. J. Ansorge, 1910.

12. 10. 19. 1. Frontlet and horns. Zeerust, Transvaal.

Presented by T. J. Starke, Esq., 1912.

Of the following specimens—from unknown localities—the majority probably belong to the present race.

646, *b*. Pair of horns.

Presented by the Trustees of the Hunterian Museum.

646, *d*. Skull-face, with horns. *Same history.*

646, *e*. A similar specimen. *Same history.*

646, *f*. Skull, with horns. *Same history.*

61. 8. 21. 8 (646, *m*). Skeleton and skin, immature female. *No history.*

96. 6. 30. 1. Skin, female.

Presented by J. G. Millais, Esq., 1896.

B.—Strepsiceros strepsiceros bea.

Strepsiceros strepsiceros bea, *Heller, Smithson. Misc. Collect.* vol. lxi, no. 13, p. 3, 1913.

Typical locality Donyo Gelsha, on the escarpment east of Lake Baringo, British East Africa.

Type in U.S. National Museum, Washington.

General colour brighter than in typical race, with the stripes more conspicuous, but reduced in number to six or eight. Compared with the next race, which it resembles in the reduction of the stripes, it differs by the darker colour of the median region of the back, the ear-tips, and the bands on the pasterns, as well as by the longer coat and more conspicuous stripes.

93. 7. 9. 25. Skull, with horns. Shiré Highlands, Nyasaland; collected by A. Whyte, Esq. Length of horns, on curve, 52 inches.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1893.

7. 10. 25. 6. Frontlet and horns, provisionally referred to this race. Portuguese East Africa.

Presented by F. Vaughan Kirby, Esq., 1907.

7. 12. 15. 1. Skin. Katambas, N. E. Rhodesia.
Presented by J. Rowland Ward, Esq., 1907.

8. 3. 14. 3. Skin. Laikipia Plateau, British East Africa. *Presented by Capt. the Hon. H. C. Guest*, 1908.

C.—Strepsiceros strepsiceros chora.

(?) Antilope tendal, *Cretzschmar*, *Atlas* to *Rüppell's Reise nördl. Africa*, p. 22, 1826; *Fischer*, *Synop. Mamm.* p. 475, 1829. May be Addax nasomaculatus.

Antilope chora, *Cretzschmar*, loc. cit. 1826; *Fischer*, loc. cit. 1829.

Strepsiceros abyssinicus, *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 176, 1869.

Strepsiceros strepsiceros chora, *Pocock*, *Proc. Zool. Soc.* 1905, vol. i, p. 140; *Heller*, *Smithson. Misc. Collect.* vol. lxi, no. 13, p. 3, 1913.

Strepsiceros capensis chora, *Lydekker*, *Game Animals of Africa*, p. 342, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 321, 1910, ed. 7, p. 319, 1914.

Typical locality Eastern Sudan.

Number of stripes frequently not exceeding four or five, but occasionally reaching seven, when, however, only four or five are distinct and clearly defined.

The range includes Somaliland and Abyssinia.

71. 11. 29. 1 (646, *n*). Skull, with horns, and skin. Bogosland, Abyssinia. *Purchased* (*Gerrard*), 1871.

71. 11. 29. 2. Skin, mounted. Same locality.
Same history.

71. 11. 29. 3. Skull, female. Same locality.
Same history.

4. 7. 2. 8. Head, mounted. N. E. Africa.
Bequeathed by H. Andrew, Esq., 1904.

4. 8. 25. 1. Skull, with horns, and skin. Blue Nile.
Presented by Capt. C. P. Roberts, 1904.

5. 5. 29. 1. Skin, immature. Somaliland.
Presented by the Zoological Society, 1905.

5. 9. 21. 13–14. Two skulls, with horns. Sennar.
Presented by Capt. E. de H. Smith, 1905.

13. 7. 13. 1. Skull, with horns. Somaliland.
Presented by Guy Chetwynd, Esq., 1913.

III.—Genus BOÖCERCUS.

Euryceros, *Gray, Proc. Zool. Soc.* 1856, p. 144, *Cat. Ruminants Brit. Mus.* p. 47, 1872, nec *Lesson*, 1830.

Boocercus, *Thomas, Ann. Mag. Nat. Hist.* ser. 7, vol. x, p. 309, 1902; *Pocock, Proc. Zool. Soc.* 1910, p. 931.

Boocerus, *Trouessart, Cat. Mamm., Suppl.* p. 731, 1904, errorim.

Differs from the two preceding genera by the presence of horns in both sexes, the terminally tufted tail, and the absence of inguinal glands; horns smooth, forming an open tragelaphine spiral of about one complete turn, with yellow tips; no frontal tuft or dewlap. Restricted to the forest-zone of Equatorial Africa.

BOÖCERCUS EURYCERUS.

Antilope euryceros, *Ogilby, Proc. Zool. Soc.* 1836, p. 120; *Waterhouse, Cat. Mamm. Mus. Zool. Soc.* p. 42, 1836; *Temminck, Esquiss. Zool. Guinė*, p. 190, 1853; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 468, 1887.

Tragelaphus eurycerus,* *Lesson, Nouv. Tabl. Règne Anim., Mamm.* p. 181, 1842; *Gray, Proc. Zool. Soc.* 1850, p. 144,† 1861, p. 276, *Knowsley Menagerie*, p. 27, pl. xxiii, fig. 1, 1850, *Cat. Ungulata Brit. Mus.* p. 136, 1852; *Wagner, Schreber's Säugthiere, Suppl.* vol. v, p. 441, 1855; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 246, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 174, 1869; *Brooke, Proc. Zool. Soc.* 1871, p. 485, pl. xxxix; *Sclater, ibid.* 1883, p. 35; *Thomas, ibid.* 1891, p. 387; *Flower and Lydekker, Study of Mammals*, p. 347, 1891; *Ward, Records of Big Game*, p. 158, 1892, ed. 2, p. 202, 1896; *Jentink, Cat. Mamm. Leyden Mus.* (*Mus. Pays-Bas*, vol. xi) p. 172, 1892; *Lydekker, Horns and Hoofs*, p. 254, 1893; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897; *Rothschild, Novit. Zool.* vol. v, p. 206, 1898; *Bryden, Great and Small Game of Africa*, p. 454, 1899; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 131, pl. xci, 1900.

Antilope (Addax) euryceros, *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 620, 1861.

Tragelaphus albo-virgatus, *du Chaillu, Proc. Boston Nat. Hist. Soc.* vol. vii, p. 299, 1861, *Explor. Equat. Africa*, p. 306, 1861.

Tragelaphus albovittatus, *Gray, Proc. Zool. Soc.* 1861, p. 276.

Euryceros euryceros, *Gray, Cat. Ruminants Brit. Mus.* p. 48, 1872, *Hand-List Ruminants Brit. Mus.* p. 119, 1873; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 23, 1888; *Büttikofer, Reisebilder aus Liberia*, vol. ii, p. 380, 1890.

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* Frequently given as *euryceros*.

† As the subgeneric term Euryceros is proposed on the same page, the name is really *Tragelaphus* (*Euryceros*) *euryceros*.

Boöcercus eurycerus, *Thomas*, *Ann. Mag. Nat. Hist.* ser. 7, vol. x, p. 309, 1902; *Alexander*, *From Niger to Nile*, vol. ii, p. 394, 1907; *Lydekker*, *Game Animals of Africa*, p. 317, 1908; *Pocock*, *Proc. Zool. Soc.* 1910, p. 931; *Ward*, *Records of Big Game*, ed. 6, p. 325, 1910, ed. 7, p. 323, 1914.

Boocerus eurycerus, *Trouessart*, *Cat. Mamm.*, *Suppl.* p. 731, 1904, errorim.

Bongo.

Typical locality West Africa.

Distribution the same as that of the genus.

Fig. 31.—Head of Bongo (*Boöcercus eurycerus*).

Size comparatively large—shoulder-height from about 48 to 50 inches. General colour bright chestnut, passing

into blackish on forehead and sides of face some distance below eyes; an incomplete suborbital chevron, two or three spots (which may be confluent) on cheeks, chin, and lips, a dorsal streak, from ten to fourteen or fifteen transverse stripes on body, and a narrow gorget on chest white; outer side of fore-legs blackish to pasterns, inner side mainly white, with a black chevron above white knees and a white patch above hoofs in front; hind-legs chestnut to hoofs on outer sides, with front of hocks and shanks and a patch above hoofs white, the remainder of the pasterns being blackish or brownish, as in fore-legs.

A.—Boöcercus eurycerus eurycerus.

Typical locality West Africa.

Stripes numerous, generally fourteen or fifteen.

Range restricted to the western side of the African continent.

58. 5. 4. 6 (852, *a*). Skull and horns. West Africa. Co-type.

Presented by the Zoological Society (*from their Museum*), 1858.

58. 5. 4. 7 (852, *b*). Frontlet and horns. West Africa. Co-type. Presented to the Zoological Society by Capt. W. Allen, R.N. *Same history.*

71. 5. 27. 5. Skin, immature, mounted. Ashkankolo Mountains, Gabun.

Presented by Monsieur P. B. du Chaillu, 1871.

78. 7. 16. 9. Head, mounted (fig. 31), and body-skin. Fanti. *Purchased* (*Gerrard*), 1878.

87. 10. 20. 1. Skeleton. Gabun.

Purchased (*Gerrard*), 1887.

7. 7. 1. 1. Skull, with horns, female. Near Mango River, Sierra Leone. *Presented by Capt. L. Murray*, 1907.

11. 8. 22. 1. Skull, with horns. Gold Coast.

Presented by R. K. Gibbons, Esq., 1911.

13. 6. 25. 1. Skin, fœtal. Ashanti.

Presented by Dr. Montagu Graves, 1913.

13. 7. 13. 2. Skull, with horns. Kassandra, French Ivory Coast. *Presented by Guy Chetwynd, Esq.*, 1913.

A B

FIG. 32.—SKULLS AND HORNS OF MALE (*A*) AND FEMALE (*B*) BONGO (*Boöcerus eurycerus*), from Sierra Leone.
From photographs lent by Mr. W. T. Cross.

B.—Boöcercus eurycerus isaaci.

Boocercus eurycerus isaaci, *Thomas*, *Ann. Mag. Nat. Hist.* ser. 7, vol. x, p. 310, 1902, *Proc. Zool. Soc.* 1902, vol. ii, p. 319; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 9, 1910 (Boöcerus).

Boöcercus isaaci, *Elliot*, *Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 86, 1907; *Roosevelt*, *African Game Trails*, p. 486, 1910.

Typical locality Eldoma Ravine, B. E. Africa.

Not fully distinguished from western race, but the stripes apparently fewer, being only ten in the undermentioned mounted specimen.

97. 7. 3. 2. Frontlet and horns. East Africa; collected by Sir F. J. Jackson, K.C.M.G., C.B.
Presented by Dr. P. L. Sclater, 1897.

2. 11. 17. 1. Skin, mounted, and skull. Eldoma Ravine, B. E. Africa. This and the associated specimens are the types. *Presented by F. W. Isaac, Esq.*, 1902.

2. 11. 17. 2. Skull, with horns, and skin, immature. Same locality. *Same history.*

2. 11. 17. 3. Skull, with horns, and skin, female. Same locality. *Same history.*

2. 11. 17. 4. Skeleton, horns, and skin, female. Same locality. *Same history.*

2. 11. 17. 5. Head, mounted, and body-skin, female. Same locality. *Same history.*

7. 4. 23. 4. Skin, immature. Basoko, Aruwimi Valley. *Presented by R. L. Reid, Esq.*, 1907.

7. 4. 23. 5. Frontlet and horns. Same locality. *Same history.*

IV. Genus TAUROTRAGUS.

Oreas, *Desmarest, Mammalogie*, vol. ii, p. 471, 1822; *Rütimeyer, Abh. schweiz. pal. Ges.* vol. v, p. 73, 1878; nec *Hübner*, 1806.

Taurotragus, *Wagner, Schreber's Säugthiere, Suppl.* vol. v, p. 439, 1855; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 193, 1900; *Pocock, Proc. Zool. Soc.* 1910, p. 932.

Doratoceros, *Lydekker, Field*, vol. lxxviii, p. 130, 1891.

Orias, *Lydekker, Royal Nat. Hist.* vol. ii, p. 267, 1894, *Geogr. Hist. Mamm.* p. 247, 1896.

Very large, heavily built antelopes resembling *Boöcercus* in the tufted tail and the presence of horns in both sexes, but distinguished by the horns being strongly keeled, and forming a closely twisted screw-like spiral, on which the front keel makes one complete turn, the tips being black; as well as by the presence of a more or less strongly developed bushy frontal tuft, and of a heavy dewlap, fringed with long hair. In females the horns are longer, thinner, and less strongly keeled, while the dewlap is wanting and the frontal tuft less developed.

The range includes the greater part of Ethiopian Africa, exclusive of the equatorial forest. In the Pliocene the group was represented in India by the so-called *T. latidens*,

which may belong to an extinct genus;* but the reference to it of teeth from the superficial deposits of North America † is almost certainly incorrect.

The two species are distinguishable as follows:—

A. Size smaller, ears narrow and pointed, neck coloured more or less like body ..... *T. oryx.*

B. Size larger, ears broad and rounded, neck (in males) with a wide black band bordered posteriorly with white ..... *T. derbianus.*

I. TAUROTRAGUS ORYX.

Antilope oryx, *Pallas, Misc. Zool.* p. 9, 1766, *Spicil. Zool.* fasc. i, p. 15, 1767; *Müller, Natursyst., Suppl.* p. 55, 1776; *Erxleben, Syst. Regn. Anim.* p. 275, 1777; *Zimmermann, Spec. Zool. Geogr.* p. 539, 1777; *Gatterer, Brev. Zool.* vol. i, p. 79, 1780; *Sparrman, Resa*, p. 504, pl. xii, 1785, *English Transl.* (*Voyage to Cape of Good Hope*) vol. i, p. 131, vol. ii, pp. 96 and 204, pl. i, 1786; *Latham and Davies, Faunula Indica*, p. 4, 1795; *Cuvier, Tabl. Élém. Hist. Nat.* p. 163, 1798; *Lichtenstein, Forster's Descrip. Anim.* p. 33, 1844.

Antilope oreas, *Pallas, Spicil. Zool.* fasc. xii, p. 17, 1777; *Zimmermann, Geogr. Geschichte*, vol. ii, p. 109, 1780, vol. iii, p. 269, 1783; *Schreber, Säugthiere*, pl. cclvi, 1784; *Boddaert, Elenchus Anim.* p. 139, 1785; *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 190, 1788; *Kerr, Linn.'s Anim. Kingdom*, p. 317, 1792; *Donndorff, Zool. Beyträge*, vol. i, p. 639, 1792; *Latham and Davies, Faunula Indica*, p. 4, 1795; *Link, Beyträge Naturgesch.* vol. ii, p. 100, 1795; *Bechstein, System. Uebersicht vierfüss. Thiere*, vol. ii, p. 642, 1800; *Shaw, Gen. Zool.* vol. ii, pt. 2, p. 319, pl. clxxxv, 1801; *Turton, Linn.'s Syst. Nat.* vol. i, p. 115, 1802; *Desmarest, Nouv. Dict. Hist. Nat.* vol. vi, p. 376, 1803, vol. xxiv, p. 32, 1804; *Cuvier, Dict. Sci. Hist. Nat.* vol. ii, p. 244, 1804, *Règne Anim.* vol. i, p. 263, 1817; *Thunberg, Mém. Ac. Sci. St. Pétersb.* vol. iii, p. 314, 1811; *Lichtenstein, Reise südl. Africa*, vol. i, p. 155, 1811, vol. ii, pp. 39 and 46, 1812; *G. Fischer, Zoognosia*, vol. iii, p. 422, 1814; *Afzelius, Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Burchell, List Quadrupeds presented to Brit. Mus.* p. 7, 1817, *Travels in S. Africa*, vol. i, p. 245, 1822; *Goldfuss, Schreber's Säugthiere*, vol. v, p. 1153, 1818; *Gray, Med. Repos.* vol. xv, p. 307, 1821; *Schinz, Cuvier's Thierreich*, vol. i, p. 296, p. 396, 1821, *Synop. Mamm.* vol. ii, p. 449, 1845; *Desmoulins, Dict. Class. Hist. Nat.* vol. i, p. 447, 1822; *Masson, Cuvier's Règne Anim.* vol. i, p. 317, 1836; *Owen, Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 637, 1868; *Giebel, Säugethiere*, p. 200, 1853–55; *Drummond, Large*

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* See Pilgrim, *Rec. Geol. Surv. India*, vol. xliii, p. 303, 1913.

† *Taurotragus americanus*, Gidley, *Smithson. Misc. Collect.* vol. lx, no. 27, p. 1, 1913; see also *Matschie, Sitzber. Ges. nat. Freunde*, 1913, p. 250.

Game of S. Africa, pp. 137 and 427, 1875; *Huet, Bull. Soc. Acclim.* ser. 4, vol. iv, p. 471, 1887.

Capra oreas, *Thunberg, Resa*, vol. ii, p. 66, 1789, *English Transl.* vol. ii, p. 58, 1793.

Antilope (Bubalis) oreas, *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 153, 1814.

Antilope (Boselaphus) oreas, *Desmarest, Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 201, 1816; *A. Smith, S. African Quart. Journ.* vol. ii, p. 222, 1834; *Lesson, Hist. Nat. Anim.* vol. x, p. 302, 1836; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 465, 1844.

Cerophorus (Boselaphus) oreas, *Blainville, Bull. Soc. Philom.* 1816, p. 75.

Cemas alces, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 735, 1816.

Antilope (Oreas) oreas, *Desmarest, Mammalogie*, vol. ii, p. 471, 1822; *Schinz, Nat. Abbild. Säugeth.* p. 301, pl. cxxvii, 1827, *Mon. Antilop.* p. 45, pl. 2, 1848; *Lesson, Nouv. Tabl. Règne Anim., Mamm.* p. 181, 1842.

Antilope (Oreas) canna, *Desmarest, Mammalogie*, vol. ii, p. 471, 1822; *Lesson, Man. Mamm.* p. 384, 1827.

Damalis oreas, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 355, pl. 1827; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 199, 1846.

Damalis (Boselaphus) oreas, *H. Smith, Griffith's Animal Kingdom*, vol. v, p. 364, 1827.

Damalis canna, *H. Smith*, op. cit. vol. iv, p. 357, 1827.

Damalis (Boselaphus) canna, *H. Smith*, op. cit. vol. v, p. 365, 1827.

Boselaphus oreas, *Smuts, Enum. Mamm. Cap.* p. 90, 1830; *Jardine, Naturalist's Libr., Mamm.* vol. iv, p. 117, pl. xix, 1836; *Harris, Wild Anim. S. Africa*, p. 24, pl. vi, 1840; *Gray, List Mamm. Brit. Mus.* p. 155, 1843, *List Osteol. Brit. Mus.* p. 59, 1847, *Knowsley Menagerie*, pls. i and ii, 1850; *A. Smith, Illustr. Zool. S. Africa*, pls. xl and xli, 1859; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 179, 1869.

Boselaphus canna, *Smuts, Enum. Mamm. Cap.* p. 91, 1832; *Gray, List Mamm. Brit. Mus.* p. 155, 1843.

Antilope (Boselaphus) canna, *A. Smith, S. African Quart. Journ.* vol. ii, p. 223, 1834.

Antilope canna, *Owen, Proc. Zool. Soc.* 1836, p. 38, *Anat. Vertebrates*, vol. iii, p. 364, 1868.

Antilope (Buselaphus) oreas, *Reichenbach, Säugethiere*, vol. iii, p. 142, 1845.

Antilope (Buselaphus) canna, *Reichenbach*, op. cit. p. 145, 1845.

Oreas canna, *Gray, Proc. Zool. Soc.* 1850, p. 143, *Knowsley Menagerie*, p. 27, 1850, *Ann. Mag. Nat. Hist.* ser. 2, vol. viii, p. 225, 1851, *Cat. Ungulata Brit. Mus.* p. 134, 1852, *Cat. Ruminants Brit. Mus.* p. 47, 1872, *Hand-List Ruminants Brit. Mus.* p. 118, 1873; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 244, 1862; *Kirk, Proc. Zool. Soc.* 1864, p. 659; *Flower, ibid.* 1875, p. 186; *Buckley, ibid.* 1876, p. 284; *Garrod, ibid.* 1877, p. 4; *Bocage, ibid.* 1878, p. 745, *J. Sci. Lisboa*, vol. ii, p. 25, 1890; *Schmidt, Proc. Zool. Soc.* 1880, p. 305; *Selous, ibid.* 1881, p. 749, *A Hunter's Wanderings in S. Africa*, p. 204, 1881;

Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg. pt. ii, p. 258, 1884; *Bryden, Kloof and Karroo*, p. 291, 1889; *Hunter, Willoughby's Great Game E. Africa*, p. 287, 1889; *Crawshay, Proc. Zool. Soc.* 1890, p. 658; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. 2, p. 152, 1891; *Flower and Lydekker, Study of Mammals*, p. 348, 1891; *Nicolls and Eglington, Sportsman in S. Africa*, p. 54, 1892; *Thomas, Proc. Zool. Soc.* 1893, p. 504, 1894, p. 145, 1896, p. 797; *Lydekker, Horns and Hoofs*, p. 258, 1893; *Sclater, Proc. Zool. Soc.* 1896, p. 506; *Pousargues, Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897.

Antilope (Damalis) oreas, *Peters, Reise nach Mossambique, Säugeth.* p. 192, 1852.

Antilope (Taurotragus) oreas, *Wagner, Schreber's Säugthiere, Suppl.* vol. v, p. 439, 1855.

Antilope (Addax) oreas, *Laurillard, Dict. Univ. Hist. Nat.* p. 620, 1861.

Oreas oreas, *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 140, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 172, 1892; *Matschie, Säugethiere Deutsch-Ostafrika*, p. 141, 1895.

Antilope triangularis, *Günther, Proc. Zool. Soc.* 1889, p. 73; *Sclater, ibid.* 1896, p. 506.

Doratoceros triangularis, *Lydekker, Field*, vol. lxxviii, p. 130, 1891, *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, p. 192, 1891, *Horns and Hoofs*, p. 260, 1893.

Taurotragus oryx, *Lydekker, Great and Small Game of Africa*, p. 421, 1899, *Game Animals of Africa*, p. 304, 1908; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 195, pls. xcviii and xcix, 1900; *Pocock, Proc. Zool. Soc.* 1910, p. 932; *Ward, Records of Big Game*, ed. 6, p. 327, 1910, ed. 7, p. 325, 1914; *Carruccio, Boll. Soc. Zool. ital.* ser. 3, vol. 2, p. 77, 1913.

Oreas oryx, *Matschie, Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Oreas triangularis, *Matschie*, op. cit. 1913.

ELAND.

Typical locality South Africa.

The type species; also type of *Oreas* and *Doratoceros*.

Height reaching to about 5 feet 7 inches, or perhaps 6 feet at withers. Ears pointed and relatively narrow, with, at most, a small black patch on outer border of backs; general colour greyish or pale rufous tawny, usually with a dark dorsal stripe, and with or without a variable number of narrow vertical white stripes; neck coloured more or less nearly like back; frontal tuft well developed, in some cases with orange borders, in others wholly dark; a suborbital white streak present or absent; tuft on dewlap and tail-tuft black; fore-legs with or without a dark garter on hind surface above knees; back of pasterns dirty white or black. Horns of moderate size; fine specimens measuring from

30 to 37 inches in length in a straight line, with a basal girth of from 11 to 16, and a tip-to-tip interval ranging from 7½ to 27 inches. Female horns may be abnormally long, with but slight development of the spiral twist.

The range extends from Cape Colony to the Kenia district of British East Africa on the east, and to Angola on the west; the typical southern form being apparently almost extinct.

The four better known races are distinguishable as follows:—

A. Body not striped ..... *T. o. oryx.*

B. Body striped.

a. Backs of pasterns whitish.

a'. Typically no white suborbital streak *T. o. livingstonei.*

b'. Typically a white suborbital streak *T. o. selousi.*

b. Backs of pasterns black ..... *T. o. pattersonianus.*

The characters on which the other two named races are based are given in the sequel.

A.—Taurotragus oryx oryx.

Taurotragus oryx typicus, *Lydekker, Great and Small Game of Africa*, p. 421, 1899; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 195, 1900; *Ward, Records of Big Game*, ed. 6, p. 328, 1910, ed. 7, p. 325, 1914.

Taurotragus oryx oryx, *Lydekker, Novit. Zool.* vol. xiv, p. 324, 1907.

Typical locality South Africa.

Whole colour uniformly tawny, white body-stripes and suborbital streaks, and dark knee-bands and black on posterior aspect of pasterns being, typically, absent.

647, *e*. Skeleton, female, immature. S. Africa.
Presented by the Earl of Derby, about 1842.

647, *h*. Frontlet and horns, young. S. Africa.
Same history.

42. 12. 6. 14 (647, *q*). Skull, with horns, and head-skin. S. Africa; collected by Mr. Burke. *Same donor*, 1842.

42. 12. 6. 15 (647, *r*). Skull, with horns, and head-skin, female. Same locality and collector. *Same history.*

647, *j*. Frontlet and horns, female. Algoa Bay.
Presented by C. Wemyss, Esq.

43. 9. 27. 25. Skin, mounted, young. S. Africa.
Purchased (*Brandt*), 1843.

647, *i*. Skeleton. S. Africa.
Purchased (*Zoological Society*).

647, *i*.* Skeleton, female. S. Africa. *Same history.*

63. 12. 3. 6. Skin, mounted, new-born young. Bred in London. *Same history*, 1863.

89. 2. 4. 1. Frontlet, with horns of abnormal form, female. S. Africa. Type of *Antilope triangularis* and *Doratoceros*. *Presented by Morton Green, Esq.*, 1889.

B.—Taurotragus oryx livingstonei.

Oreas livingstonii, *Sclater*, *Proc. Zool. Soc.* 1864, p. 105; *Kirk*, *ibid.* 1864, p. 659; *Selous*, *ibid.* 1883, p. 32; *Matschie*, *Säugethiere Deutsch-Ostafrika*, p. 141, 1895, *Werther's Die mittl. Hochländ. Deutsch-Ostafrika*, p. 259, 1898; *Pousargues*, *Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897; *Rendall*, *Novit. Zool.* vol. v, p. 213, 1898; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Antilope (Taurotragus) livingstonii, *Heuglin*, *Reise Weiss. Nil*, p. 316, 1869.

Oreas canna livingstoni, *Jackson*, *Big Game Shooting* (*Badminton Libr.*), vol. i, p. 285, 1894, *Proc. Zool. Soc.* 1895, p. 456; *Sclater*, ibid. 1895, p. 690; *Thomas*, *ibid.* 1894, p. 394.

Taurotragus oreas livingstonei, *Sclater*, *Proc. Zool. Soc.* 1893, p. 507.

Taurotragus oryx livingstonei, *Lydekker*, *Great and Small Game of Africa*, p. 421, 1899, *Novit. Zool.* vol. xiv, p. 324, 1907, *Game Animals of Africa*, p. 306, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 197, 1900; *Elliot*, *Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 90, 1907; *Ward*, *Records of Big Game*, ed. 6, p. 329, 1910, ed. 7, p. 326, 1914.

Taurotragus oryx livingstonianus, *Roberts*, *Ann. Transvaal Mus.* vol. iv, p. 106, 1913.

Typical locality Sesheke, north of the Victoria Falls of the Zambesi.

Body marked with about eight white stripes and a dark garter on hind surface of fore-legs above knees, but back of pasterns white, and, typically, no white streak below eyes.

93. 5. 6. 9. Skull, with horns, female. Zomba, Nyasaland; collected by A. Whyte, Esq.

Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1893.

93. 7. 9. 19 & 20. Two skulls, with horns, and skins, female. Shiré Highlands, Nyasaland; same collector.
Same history.

98. 5. 22. 25. Skull, with horns, and skin. Zomba.
Presented by Sir Alfred Sharpe, K.C.M.G., C.B.

7. 10. 25. 5. Skull, with horns. Portuguese East Africa.*
Presented by F. Vaughan Kirby, Esq., 1907.

C.—Taurotragus oryx selousi.

Oreas canna, *Selous, A Hunter's Wanderings in S. Africa*, pl. i, figs. 1 and 3, 1890.

Taurotragus oryx selousi, *Lydekker, Ward's Records of Big Game*, ed. 6, p. 328, 1910, ed. 7, p. 330, 1914.

Oreas selousi, *Matschie, Deutsche Jäger-Zeitung*, vol. lix, p. 119, 1912, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Typical locality Mashonaland.

Typified by the two heads figured by Selous, *op. cit.*

Distinguished from *livingstonei* by the presence of an incomplete white chevron below the eyes; frontal tuft of adult males well developed, chocolate-brown.

84. 8. 1. 4. Skin, mounted. Rugawé Valley, Mashonaland; collected by F. C. Selous, Esq. Topo-type.
Purchased, 1884.

84. 8. 1. 5. Skin, mounted, female. Hanyani Valley, Mashonaland; same collector. *Same history.*

86. 5. 5. 6. Skeleton. Same locality and collector.
Purchased, 1886.

86. 5. 5. 7. Skeleton, female. Same locality and collector. *Same history.*

81. 10. 28. 6 & 7. Two skulls, with horns, and headskins. Same locality and collector. *Purchased*, 1881.

83. 7. 28. 10. Skull, with horns. Gwenia Valley, Mashonaland; same collector. *Purchased*, 1883.

D.—Taurotragus oryx niediecki.

Oreas oryx niediecki, *Matschie, Sitzber. Ges. nat. Freunde*, 1913, p. 249.

Typical locality Zambesia.

With white body-stripes and a blackish garter above the

* Some of the elands from Portuguese East Africa have a white chevron, while in others it is wanting. See *Novit. Zool.* vol. xiv, p. 325.

knees, this form of the eland is stated to be distinguished by the horns being strongly inclined inwards instead of bent backwards. It is further stated to be distinct from the so-called *triangularis*, which came from the same region.

No specimen in collection.

E.—Taurotragus oryx kaufmanni.

Oreas oreas kaufmanni, *Matschie*, *Deutsche Jäger-Zeitung*, vol. lix, p. 119, 1912.

Oreas kaufmanni, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Typical locality Mount Caprivi, between the Chobi and Zambesi, German S. W. Africa.

Stated to differ from *selousi* by the white suborbital streak being angulated instead of linear, and from *pattersonianus* (*infra*) by the frontal tuft being broad and chocolate-brown instead of narrow and chestnut.

No specimen in collection.

F.—Taurotragus oryx pattersonianus.

Taurotragus oryx pattersonianus, *Lydekker*, *Field*, vol. cviii, p. 579, 1906, *Novit. Zool.* vol. xiv, p. 325, pl. i, 1907, *Game Animals of Africa*, p. 307, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 330, 1910, ed. 7, p. 328, 1914; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 10, 1910.

Oreas pattersonianus, *Matschie*, *Deutsche Jäger-Zeitung*, vol. lix, p. 119, 1912, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Typical locality Laikipia Plateau, B. E. Africa.

General colour pale rufous fawn, with three or four distinct white stripes on and near withers, and more or less clear indications of others farther back; a dorsal stripe, a garter above hind surface of each knee, and the backs of the pasterns brownish black; frontal tuft moderately developed, the forehead of adult (not old) males showing a narrow median blackish brown stripe above and between the eyes, flanked on either side by bright orange rufous, with a pair of white streaks, forming an incomplete chevron, below the eyes; lower part of face dark brown, with a lateral fawn patch above each nostril; neck much more rufous than body.

6. 10. 14. 1. Head, mounted, and body-skin. Laikipia, B. E. Africa. Type; head figured, *Novit. Zool. loc. cit.*

Presented by Lieut.-Col. J. H. Patterson, 1906.

12. 9. 15. 1. Skin, mounted. Laikipia.
Presented by F. C. Selous, Esq., 1912.

92. 10. 18. 19. Skull, with horns, deformed, female. Kilimanjaro district; collected by Sir F. J. Jackson, K.C.M.G. C.B. *Presented by J. Rowland Ward, Esq.*, 1892.

FIG. 33.—HEAD OF LAIKIPIA ELAND (*Taurotragus oryx pattersonianus*).
From *Novitates Zoologicæ*, 1907.

N.B.—The following specimens may indicate another race:—

98. 4. 28. 2. Skull, with horns. N. E. Africa, probably the neighbourhood of Lake Rudolf.
Presented by H. S. H. Cavendish, Esq., 1898.

98. 4. 28. 3. Skull, with horns, female. Same locality.
Same history.

II. TAUROTRAGUS DERBIANUS.

Boselaphus oreas, *Gray*, *List Osteol. Brit. Mus.* p. 145, 1847, *nec* Antilope oreas, *Pallas*.

Boselaphus derbianus, *Gray*, *Ann. Mag. Nat. Hist.* ser. 1, vol. xx, p. 286, 1847, ser. 2, vol. viii, p. 226, 1851, *Silliman's Journal*, vol. v, p. 279, 1848, *Proc. Zool. Soc.* 1850, p. 144, *Knowsley Menagerie*, pl. xxv, 1850; *Gervais*, *Hist. Nat. Mamm.* vol. ii, p. 201, pl. xxxviii, 1855; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 169, 1869.

Oreas derbianus, *Gray*, *Knowsley Menagerie*, p. 27, 1850, *Cat. Ungulata Brit. Mus.* p. 136, 1852, *Cat. Ruminants Brit. Mus.* p. 47, 1872, *Hand-List Ruminants Brit. Mus.* p. 118, 1873; *Gerrard*, *Cat. Bones Mamm. Brit. Mus.* p. 245, 1862; *Winwood Reade*, *Proc. Zool. Soc.* 1863, p. 169, pl. xxii, *Savage Africa*, p. 398, 1864; *Rochebrune*, *Faune Sénégamb.* p. 120, pl. vii, fig. 1, 1883; *Jentink*, *Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 141, 1887; *Lydekker*, *Horns and Hoofs*, p. 260, 1893; *Pousargues*, *Ann. Sci. Nat., Zool.* ser. 7, vol. iv, p. 81, 1897; *Sclater*, *Proc. Zool. Soc.* 1898, p. 349; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Antilope (Taurotragus) derbianus, *Wagner*, *Schreber's Säugthiere*, *Suppl.* vol. v, p. 439, 1855.

Oreas colini, *Rochebrune*, *Bull. Soc. Philom.* ser. 7, vol. vii, p. 8, 1883, *Faune Sénégamb.* p. 121, pl. vii, fig. 1, 1883; *Matschie*, *Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Taurotragus derbianus, *Lydekker*, *Great and Small Game of Africa*, p. 439, 1899, *Game Animals of Africa*, p. 314, 1908; *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 215, pl. c, 1900; *Lortet and Gaillard*, *Arch. Mus. Lyon*, ser. 4, vol. viii, no. 2, p. 90, 1903 (*derbyanus*); *Rothschild*, *Novit. Zool.* vol. xii, p. 447, 1905; *Ward*, *Records of Big Game*, ed. 6, p. 333, 1910, ed. 7, p. 331, 1914.

Typical locality Casamance to the south of the Gambia.

Size larger, horns longer and stouter, ears broader and blunter, with more black on the back, and stripes more numerous, and general colour richer than in the typical species, the greater part of the sides of neck being black, bordered posteriorly with a white band. In sub-adult bulls the forehead is short-haired and chestnut, but a frontal tuft, which is typically cholocate or reddish fulvous, is developed later; lower part of face dark brown; a brown mane on back of neck; white suborbital streaks and dark knee-garters are developed, and the hind surfaces of the pasterns are wholly black.

The races are distinguishable as follows:—

A. Horns shorter and stouter; frontal tuft chocolate (reddish fulvous).
  a. General colour deep chestnut or rufous; 14 or 15 stripes ..... *T. d. derbianus.*
  b. General colour paler; about 10 stripes ..... *T. d. gigas.*
B. Horns larger and more slender: frontal tuft blackish chestnut ..... *T. d. congolanus.*

The typical locality of the so-called *Oreas colini* is Kitu, Upper Senegal.

A.—Taurotragus derbianus derbianus.

Taurotragus derbianus typicus, *Ward, Records of Big Game*, ed. 6, p. 334, 1910, ed. 7, p. 332, 1914.
Taurotragus derbianus derbianus, *Rothschild, Ann. Mag. Nat. Hist.* ser. 8, vol. xii, p. 575, 1913.

Typical locality Casamance, south of the Gambia.

General colour deep chestnut or rufous; white stripes fourteen or fifteen. Fine horns measure from 30 to 42 inches, with a basal girth of from $9\frac{1}{4}$ to $14\frac{1}{8}$, and a tip-to-tip interval of from $15\frac{1}{4}$ to $29\frac{7}{8}$ inches.

1648, *b* (originally 647, *c*). Frontlet and horns. Gambia; collected by Mr. T. Whitfield. Cotype.
Presented by the Earl of Derby, about 1842.

1648, *a* (originally 647, *a*). Frontlet and horns. Same locality and collector. *Same history.*

63. 4. 15. 1 (1648, *c*). Skull, with horns, and skin. Senegal. *Presented by F. Winwood Reade, Esq.*, 1863.

63. 4. 15. 2 (1648, *d*). Skull, with horns. Same locality. *Same history.*

89. 10. 7. 6. Skull, with horns, and head-skin. Barcote, Upper Gambia. *Presented by Dr. Percy Rendall*, 1889.

11. 6. 10. 111. Skull, with horns, and skin, female. Upper Gambia. *Presented by G. Fenwick-Owen, Esq.*, 1911.

B.—Taurotragus derbianus gigas.

Taurotragus (Boselaphus) oreas, *Heuglin, Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, p. 19, 1863, *Reise Weiss. Nil*, p. 319, 1869, *nec* Antilope oreas, *Pallas.*

Taurotragus (Boselaphus) gigas, *Heuglin*, *Nova Acta Ac. Cæs. Leop.-Car.* vol. xxx, p. 19, pl. i, fig. 2, 1863, *Reise Weiss. Nil*, p. 318, 1869; *Fitzinger*, *Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 179, 1869.

Taurotragus gigas, *Baker*, *Wild Beasts and their Ways*, p. 342, 1891; *Roosevelt*, *African Game Trails*, p. 486, 1910.

FIG. 34.—HEAD OF SUDANI RACE OF LORD DERBY'S ELAND (*Taurotragus oryx gigas*).
From Rothschild, *Novitates Zoologicæ*, 1905.

Taurotragus oryx gigas, *Sclater and Thomas*, *Book of Antelopes*, vol. iv, p. 198, 1900.

Taurotragus derbianus gigas, *Rothschild*, *Novit. Zool.* vol. xii, p. 447, 1905, *Ann. Mag. Nat. Hist.* ser. 8, vol. xii, p. 575, 1913; *Butler*, *Proc. Zool. Soc.* 1905, vol. i, p. 288; *Lydekker*, *Novit. Zool.*

vol. xiv, p. 325, 1907, *Game Animals of Africa*, p. 314, 1908; *Ward, Records of Big Game*, ed. 6, p. 336, 1910, ed. 7, p. 334, 1914.

Taurotragus derbianus, *Rothschild, Novit. Zool.* vol. xii, pl. xii, 1905.

Oreas gigas, *Matschie, Sitzber. Ges. nat. Freunde*, 1913, p. 255.

Typical locality west side of the White Nile, Bahr-el-Ghazal, in about 7° N. lat.

Type apparently in Senckenberg Museum, Frankfort-am-Main.

General colour paler than in typical race; about ten vertical white stripes. In fine horns the length, in a straight line, ranges from 35 to 41 inches, with a basal girth of from 12¼ to 14, and a tip-to-tip interval of from 19½ to 33 inches.

9. 10. 12. 1. Skull, with horns. Bahr-el-Ghazal. *Purchased*, 1909.

9. 7. 12. 1. Skull, with horns, and skin, female. Twenty-five miles west of Rumbek, Bahr-el-Ghazal. *Presented by Capt. H. R. Headlam*, 1907.

10. 3. 28. 1. Head, mounted, and body-skin, female. Bahr-el-Ghazal. *Presented by Prince Paul Demidoff*, 1910.

C.—Taurotragus derbianus congolanus.

Oreas derbii, *Johnston, River Congo*, p. 391, 1884 (?), *nec* Oreas derbianus, *Gray*.

Taurotragus derbianus congolanus, *Rothschild, Ann. Mag. Nat. Hist.* ser. 8, vol. xii, p. 575, 1913.

Typical locality Eastern Congo.

Type in Tring Museum.

Horns longer and comparatively more slender than in either of the preceding races, with the spiral starting more on front of forehead, and the anterior keel passing only once round back of horn; distance between base of horn and second frontal point of the twist greater than in other races, and the interval between horns narrower than in *gigas* but wider than in *derbianus*. Hair of forehead and between horn-bases blackish chestnut, instead of the bright reddish fulvous of the other races.

No specimen in collection.

V. Genus TETRACERUS.

Tetracerus, *Leach*, *Trans. Linn. Soc.* vol. xiv, p. 524, 1825; *Blanford*, *Fauna Brit. India*, *Mamm.* p. 519, 1891.

Tetraceros, *Voigt*, *Cuvier's Thierreich*, vol. i, p. 314, 1831; *Rütimeyer*, *Abh. schweiz. pal. Ges.* vol. iv, p. 213, 1877; *Sclater and Thomas*, *Book of Antelopes*, vol. i, p. 213, 1896; *Pocock*, *Proc. Zool. Soc.* 1910, p. 921.

Differs from all the preceding genera of the subfamily by the presence of a pair of large preorbital face-glands, opening by longitudinal slits, and of a pouch-like gland in each hind lateral hoof; inguinal glands wanting. The genus is also distinguished from all other existing hollow-horned ruminants by the presence, typically, of two pairs of horns in males, of which the first pair are much smaller than the second, both being short and unkeeled; females hornless; tail relatively short, not tufted. Skull with large lachrymal pits; upper molars with short, quadrangular crowns, without a distinct additional column on inner side; sexes alike in colour; tragelaphine markings mostly absent. Placed by Gray between the reedbucks and the klipspringer-steinbok group, the genus has been generally associated by subsequent writers with the duikers. In 1877 Rütimeyer had, however, placed it next the nilgai, although separating the latter from the *Tragelaphinæ*, and classing both genera with the *Cephalophinæ*. The affinity between *Tetraceros* and *Boselaphus* is confirmed by Pocock, who includes both in the *Tragelaphinæ*.

The range is restricted to the plains of Peninsular India.

TETRACERUS QUADRICORNIS.

Cerophorus (Cervicapra) quadricornis, *Blainville*, *Bull. Soc. Philom.* 1816, pp. 75 and 78, *Journ. Phys.* August 1818, *Oken's Isis*, 1819, p. 1095.

Antilope quadricornis, *Desmarest*, *Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 193, 1816, *Mammalogie*, vol. ii, p. 466, 1822; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 395, 1821; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1243, 1824; *Lesson*, *Man. Mamm.* p. 281, 1827; *H. Smith*, *Griffith's Animal Kingdom*, vol. iv, p. 256, 1827; *J. B. Fischer*, *Synop. Mamm.* p. 471, 1829; *Waterhouse*, *Cat. Mamm. Mus. Zool. Soc.* p. 42, 1838.

Antilope chickara, *Hardwicke*, *Trans. Linn.* vol. xiv, p. 520, pls. xv and xvi, 1825; *Hills*, *ibid.* vol. xv, p. 501, pl. xix, 1827; *Lesson*,

Man. Mamm. p. 381, 1827, *Hist. Nat. Mamm.* vol. x, p. 292, 1836; *J. B. Fischer, Synop. Mamm.* p. 471, 1829; *Hodgson, Journ. Asiat. Soc. Bengal*, vol. i, p. 346, 1832, *Proc. Zool. Soc.* 1834, p. 99; *Kaup, Thierreich*, vol. i, p. 179, 1835; *Schinz, Synop. Mamm.* vol. ii, p. 424, 1845.

Antilope (Tetraceros) quadricornis, *H. Smith, Griffith's Animal Kingdom*, vol. v, p. 845, 1827; *Lesson, Hist. Nat. Mamm.* vol. x, p. 292, 1836, *Nouv. Tabl. Règne Anim., Mamm.* p. 178, 1842; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 26, 1840; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 439, 1844, vol. v, p. 410, 1855; *Giebel, Säugethiere*, p. 323 (1853–55).

"Tetraceros striaticornis, *Leach*," *Brookes, Cat. Mus.* p. 64, 1828; *Gray, Cat. Ungulata Brit. Mus.* p. 68, 1852.

Cervus latipes, *F. Cuvier, Hist. Nat. Mamm.* vol. iv, livr. lxv, pl. 420, 1832; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 189, 1846.

Antilope tetracornis, *Hodgson, Journ. Asiat. Soc. Bengal*, vol. iv, p. 525, 1835, vol. v, p. 242, 1836.

Antilope (Grimmia) quadricornis, *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 624, 1839.

Tetracerus chickara, *Jardine, Naturalist's Libr., Mamm.* vol. iv, p. 224, pl. xxxii, 1836*; *Hodgson, Journ. Asiat. Soc. Bengal*, vol. x, pt. 2, p. 913, 1841, *Calcutta Journ. Nat. Hist.* vol. viii, p. 89, 1847; *Blyth, Journ. Asiat. Soc. Bengal*, vol. xi, pt. 2, p. 451, 1842.

Cervus (Styloceros) latipes, *Lesson, Nouv. Tabl. Règne Anim., Mamm.* p. 174, 1842.

Tetracerus† quadricornis, *Gray, List. Mamm. Brit. Mus.* p. 159, 1843, *Cat. Hodgson Collect.* p. 26, 1846, *List Osteol. Brit. Mus.* p. 57, 1847, *Knowsley Menagerie*, p. 6, 1850, *Proc. Zool. Soc.* 1850, p. 117, *Cat. Ungulata Brit. Mus.* p. 68, 1852, *Cat. Ruminants Brit. Mus.* p. 18, 1872, *Hand-List Ruminants Brit. Mus.* p. 89, 1873; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 189, 1846; *Hodgson, Calcutta Journ. Nat. Hist.* vol. viii, p. 89, 1847; *Blyth, Journ. Asiat. Soc. Bengal*, vol. xvi, pt. 2, p. 879, 1847, vol. xvii, pt. 2, p. 561, 1848, *Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 165, 1863; *Turner, Proc. Zool. Soc.* 1850, p. 170; *Horsfield, Cat. Mamm. India Mus.* p. 167, 1851; *Adams, Proc. Zool. Soc.* 1858, p. 522; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 234, 1862; *Jerdon, Mamm. India*, p. 274, 1867; *Blanford, Journ. Asiat. Soc. Bengal*, vol. xxxvi, pt. 2, p. 196, 1868, *Fauna Brit. India, Mamm.* p. 519, 1891; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 169, 1869; *McMaster, Notes on Jerdon*, p. 126, 1870; *Kinloch, Large Game Shooting*, ser. 2, p. 54, 1876; *Murray, Zool. of Sind*, p. 55, 1884; *Weldon, Proc. Zool. Soc.* 1884, p. 2; *Sterndale, Mamm. India*, p. 479, 1884; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 270, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 130, 1887, *Cat. Mamm. Leyden Mus.* (op. cit. vol. xi) p. 159, 1892; *Flower and Lydekker, Study of Mammals*, p. 338, 1891; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 168, 1891; *Lydekker, Horns and Hoofs*, p. 149, 1893, *Game Animals of India, etc.* p. 171, 1907, *Cat. Hume Bequest Brit.*

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* *Tetraceros.*

† Some authors use *Tetracerus* and others *Tetraceros.*

Mus. p. 27, 1913; *Sclater and Thomas, Book of Antelopes*, vol. i, p. 215, pl. xxiv, 1895; *Bentham, Cat. Asiat. Horns Ind. Mus.* p. 46, 1908; *Ward, Records of Big Game*, ed. 6, p. 302, 1910, ed. 7, p. 300, 1914; *Pocock, Proc. Zool. Soc.* 1910, p. 921; *Wroughton, Journ. Bombay Nat. Hist. Soc.* vol. xxi, pp. 825 and 1194, 1912; *Dodsworth, ibid.* vol. xxii, p. 747, 1914.

Tetraceros iodes *and* paccerois, *Hodgson, Calcutta Journ. Nat. Hist.* vol. viii, p. 90, 1847.

Including:—

Antilope sub-4-cornutus, *Elliot, Madras Journal*, vol. x, p. 225, pl. iv, fig. 2, 1839.

Tetraceros subquadricornis, *Gray, List Mamm. Brit. Mus.* p. 159, 1843; *Turner, Proc. Zool. Soc.* 1850, p. 170.

Tetraceros subquadricornutus, *Hodgson, Calcutta Journ. Nat. Hist.* vol. viii, p. 89, 1847; *Gray, Knowsley Menagerie*, p. 70, 1850, *Proc. Zool. Soc.* 1850, p. 117, *Cat. Ungulata Brit. Mus.* p. 70, 1852, *Cat. Ruminants Brit. Mus.* p. 19, 1872, *Hand-List Ruminants Brit. Mus.* p. 89, 1873; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 225, 1862; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. i, p. 170, 1869; *Sclater, Proc. Zool. Soc.* 1875, p. 527; *Garrod, ibid.* 1877, p. 4.

Tetraceros quadricornis typicus, *Sclater and Thomas, Book of Antelopes*, vol. i, p. 215, 1895.

CHOUSINGHA; FOUR-HORNED ANTELOPE.

Typical locality the plains of Peninsular India, to which area the species is restricted.

Size small and build delicate; shoulder-height about 25 inches. General colour dull rufous brown, passing, without a sharp line of demarcation, into whitish on under-parts; muzzle, backs of ears and a line down front of limbs blackish brown; fronts and sides of pasterns whitish, and occasionally a pair of whitish spots on each cheek. Basal length of skull $6\frac{1}{2}$ inches, maximum width $2\frac{1}{4}$, interval between muzzle and orbit $3\frac{7}{8}$ inches. Fine specimens of the posterior pair of horns measure from $3\frac{3}{4}$ to $4\frac{1}{2}$ inches in length, and there is one example stated to measure 5 inches. In three examples with posterior horns of $4\frac{1}{2}$ inches, the respective measurements of the front horns are $2\frac{1}{4}$, $2\frac{1}{2}$, and $2\frac{3}{4}$ inches.

37. 6. 10. 68 (628, *a*). Frontlet and horns. Guna. *Presented by Col. J. Evans*, 1837.

628, *b*. Frontlet and horns. Same locality. *Same history.*

38. 10. 29. 24 (628, *d*). Imperfect skull, with horns. India. *Presented by J. A. Reeve, Esq.*, 1838.

43. 1. 12. 86. Skull, with horns, and skin. Northern India *Presented by B. H. Hodgson, Esq.*, 1843.

43. 1. 12. 87. Skin. Northern India. *Same history.*

45. 1. 8. 141 (628, *c*). Frontlet and horns. Northern India. *Same donor*, 1845.

45. 1. 8. 363. Skin, female. Northern India. *Same history.*

FIG. 35.—SKULL AND HORNS OF FOUR-HORNED ANTELOPE (*Tetracerus quadricornis*).

56. 9. 22. 11. Skull, with horns. Northern India; collected by General Abbott. *Purchased*, 1856.

58. 5. 4. 41 (628, *f*). Skeleton. Zoological Society's Museum. *Purchased*, 1858.

63. 5. 8. 4. Skin, mounted. India. *Purchased* (*Zoological Society*), 1863.

69. 3. 5. 1. Skin, immature female, mounted. India. *Purchased* (*Zoological Society*), 1869.

89. 11. 20. 18. Frontlet and horns. Guna.
Presented by Col. J. Evans, 1889.

2. 8. 14. 3. Skull, with horns. Central Provinces.
Presented by Mrs. Bellew, 1902.

8. 2. 18. 1. Skin. Indore, Central India.
Presented by J. Rowland Ward, Esq., 1908.

11. 11. 13. 1. Skin, mounted. Central Provinces.
Presented by the Bombay Natural History Society, 1911.

12. 10. 31. 94–96. Three skulls, with horns. India.
Bequeathed by A. O. Hume, Esq., C.B., 1912.

The following specimens represent the so-called *T. subquadricornutus;* if all belong to the same form, the widely sundered localities of the first and last render it improbable that they indicate a local race.

884, *c* (43, *a*). Skull, with horns, and skin. Southern Mahratta country. Type of *T. subquadricornutus.*
Presented by Sir Walter Elliot.

884, *d* (43, *d*). Skull and skin, female. Same locality.
Same history.

46. 11. 6. 19 (884, *b*). Skull, with horns, and skin. Eastern Ghats, Madras.
Presented by Surgeon-General T. C. Jerdon, 1846.

46. 11. 6. 22 (47. 1. 25. 16 and 884, *a*). Skull and skin, female. Same locality. *Same history.*

98. 6. 3. 3. Imperfect skull, with horns. Gir Forest, Kathiawar. *Presented by Lieut.-Col. L. L. Fenton*, 1898.

VI. Genus BOSELAPHUS.

Boselaphus, *Blainville, Bull. Soc. Philom.* 1816, p. 75; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 91, 1900; *Max Weber, Säugethiere*, p. 675, 1904; *Pocock, Proc. Zool. Soc.* 1910, p. 926.

Portax, *H. Smith, Griffith's Animal Kingdom*, vol. v, p. 366, 1827; *Rütimeyer, Abh. schweiz. pal. Ges.* vol. iv, p. 54, 1877.

Buselaphus, *Reichenbach, Säugethiere*, vol. iii, p. 111, 1845.

Bosephalus, *Horsfield, Cat. Mamm. Mus. E. Ind. Co.* p. 169, 1851, errorim.

Distinguished from the preceding genus by the much larger bodily size of the single species, the smaller face-

glands and lachrymal pits; the absence of glands in the hind lateral hoofs, the single pair of short and distinctly keeled horns, which are restricted to males, and the taller crowns of the upper molars, which have an additional column on the inner side; withers considerably higher than hind-quarters; tail reaching to hocks, more or less fringed at sides, but not distinctly tufted at tip. Sexes unlike in colour, with tragelaphine markings partially developed.

The range is restricted to the plains of Peninsular India.

BOSELAPHUS TRAGOCAMELUS.

Antilope tragocamelus, *Pallas*, *Misc. Zool.* p. 5, 1766, *Spicil. Zool.* fasc. i, p. 9, 1767, xii, p. 13, 1777; *Gatterer*, *Brev. Zool.* pt. i, p. 80, 1780; *Schreber*, *Säugthiere*, pl. cclxii, 1784; *Boddaert*, *Elenchus Anim.* p. 140, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 184, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 308, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 625, 1792; *Forster*, *Zool. Ind.* p. 39, 1795; *Latham and Davies*, *Faunula Indica*, p. 4, 1795; *Link*, *Beyträge Naturgesch.* p. 99, 1795; *Bechstein*, *Syst. Uebersicht vierfüss. Thiere*, vol. ii, p. 77, 1799; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 329, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 112, 1802; *Tiedemann*, *Zoologie*, vol. i, p. 409, 1808; *G. Fischer*, *Zoognosia*, vol. iii, p. 412 1814; *Afzelius*, *Nova Acta Soc. Upsal*, vol. vii, p. 220, 1815; *Cuvier*, *Règne Animal*, vol. i, p. 264, 1817; *Schinz*, *Cuvier's Thierreich*, vol. i, p. 396, 1821; *F. Cuvier*, *Hist. Nat. Mamm.* vol. iii, livr. xlvi, pls. 339, 340, 1824; *Masson*, *Cuvier's Règne Anim.* p. 316, 1836.

Antilope albipes, *Erxleben*, *Syst. Regn. Anim.* p. 280, 1777; *Gatterer*, *Brev. Zool.* pt. i, p. 81, 1780; *G. Fischer*, *Zoognosia*, vol. iii, p. 411, 1814.

Antilope leucopus, *Zimmermann*, *Spec. Zool. Geogr.* p. 541, 1777; *Forster*, *Zool. Ind.* p. 39, 1795, *Descrip. Anim.* p. 377, 1844.

Antilope picta, *Pallas*, *Spicil. Zool.* fasc. xii, p. 14, 1777; *Pennant*, *Quadrupeds*, p. 74, pl. vii, 1781; *Schreber*, *Säugthiere*, pl. cclxiii and cclxiii B, 1784; *Boddaert*, *Elenchus Anim.* p. 141, 1785; *Gmelin*, *Linn.'s Syst. Nat.* vol. i, p. 184, 1788; *Kerr*, *Linn.'s Anim. Kingdom*, p. 309, 1792; *Donndorff*, *Zool. Beyträge*, vol. i, p. 625, 1792; *Latham and Davies*, *Faunula Indica*, p. 4, 1795; *Link*, *Beyträge Naturgesch*, p. 99, 1795; *Cuvier*, *Tabl. Elém. Hist. Nat.* p. 163, 1798; *Bechstein*, *Syst. Uebersicht vierfüss. Thiere*, vol. ii, p. 78, pl. ix, 1799; *Shaw*, *Gen. Zool.* vol. ii, pt. 2, p. 327, 1801; *Turton*, *Linn.'s Syst. Nat.* vol. i, p. 112, 1802; *Cuvier*, *Dict. Sci. Nat.* vol. ii, p. 248, 1804, *Règne Animal*, vol. i, p. 264, 1817; *Afzelius*, *Nova Acta Soc. Upsal.* vol. vii, p. 220, 1815; *Goldfuss*, *Schreber's Säugthiere*, vol. v, p. 1159, 1818; *Desmoulins*, *Dict. Class. Hist. Nat.* vol. i, p. 447, 1822; *Schinz*, *Abbild. Säugeth.* p. 355, pl. clxi, 1824, *Synop. Mamm.* vol. ii, p. 449, 1845; *F. Cuvier*, *Hist. Nat. Mamm.* vol. iii, livr. xlvi, pls. 339, 340, 1824; *J. B. Fischer*, *Synop. Mamm.* p. 476, 1829;

Bennett, Gardens and Menagerie Zool. Soc. vol. i, p. 125, 1830; *Sykes, Proc. Zool. Soc.* 1831, p. 105; *Masson, Cuvier's Règne Anim.* vol. i, p. 318, 1836; *Owen, Proc. Zool. Soc.* 1836, p. 37, *Anat. Vertebrates*, vol. iii, p. 633, 1868; *Waterhouse, Cat. Mus. Zool. Soc.* p. 42, 1838.

Antilope (Bubalis) tragocamelus, *Lichtenstein, Mag. nat. Freunde*, vol. vi, p. 164, 1814.

Cemas tragocamelus, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 729, 1816.

Cemas picta, *Oken, op. cit.* 1816.

Boselaphus pictus, *Blainville, Bull. Soc. Philom.* 1816, p. 75; *Desmarest, Mammalogie*, vol. ii, p. 471, 1822; *Lesson, Man. Mamm.* p. 384, 1827, *Nouv. Tabl. Règne Anim.* p. 181, 1842; *Gervais, Dict. Sci. Nat., Suppl.* vol. i, p. 266, 1840.

Boselaphus albipes, *Desmarest, Nouv. Dict. Hist. Nat.* ed. 2, vol. ii, p. 199, pl. xxxiii, fig. 2, 1816.

Damalis risia, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 363, 1827; *Elliot, Madras Journal*, vol. x, p. 226, 1839.

Damalis (Portax) risia, *H. Smith, op. cit.* vol. v, p. 366, 1827.

Damalis picta, *Brookes, Cat. Mamm.* p. 64, 1828.

Portax picta, *Lesson, Hist. Nat. Mamm.* vol. x, p. 304, 1836; *Jardine, Naturalist's Libr., Mamm.* vol. iv, p. 182, pl. xxi, 1836; *Gray, List Mamm. Brit. Mus.* p. 154, 1843, *List Osteol. Brit. Mus.* p. 59, 1847; *Wagner, Schreber's Säugthiere, Suppl.* vol. iv, p. 467, 1844, vol. v, p. 450, 1855; *Reichenbach, Säugethiere*, vol. iii, p. 148, 1845; *Hutton, Journ. Asiat. Soc. Bengal*, vol. xv, p. 150, 1846; *Horsfield, Cat. Mamm. India Mus.* p. 170, 1850; *Jerdon, Mamm. India*, p. 272, 1867; *Fitzinger, Sitzber. k. Ak. Wiss. Wien*, vol. lix, pt. 1, p. 181, 1869; *McMaster, Notes on Jerdon*, p. 122, 1870; *Kinloch, Large Game Shooting*, vol. i, p. 55, 1876, ser. 2, p. 93, 1885; *Sterndale, Mamm. India*, p. 479, 1884; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix) p. 141, 1887, *Cat. Mamm. Leyden Mus.* (*op. cit.* vol. xi) p. 173, 1892, *Percy, Big Game Shooting* (*Badminton Libr.*), vol. ii, p. 353, 1894.

Tragelaphus hippelaphus, *Ogilby, Proc. Zool. Soc.* 1836, p. 138; *Rüppell, Verzeichniss Mus. Senckenberg.* vol. iii, pt. 2, p. 181, 1842.

Portax tragelaphus, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 198, 1846; corrected to *tragocamelus*, p. 315, 1847.

Antilope (Damalis) picta, *Schinz, Mon. Antilop.* p. 44, pl. xlix, 1848.

Portax tragocamelus, *Gray, Proc. Zool. Soc.* 1850, p. 146, *Knowsley Menagerie*, p. 28, pl. xxix, 1850, *Cat. Ungulata Brit. Mus.* p. 141, 1852, *Cat. Ruminants Brit. Mus.* p. 51, 1872, *Hand-List Ruminants Brit. Mus.* p. 121, 1873; *Adams, Proc. Zool. Soc.* 1858, p. 523; *Gerrard, Cat. Bones Mamm. Brit. Mus.* p. 247, 1862; *Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal*, p. 165, 1863.

Antilope (Cephalophus) picta, *Giebel, Säugethiere*, p. 323, 1853–55.

Antilope (Bubalus) picta, *Laurillard, Dict. Univ. Hist. Nat.* vol. i, p. 625, 1861.

Boselaphus tragocamelus, *Sclater, List Anim. Zool. Gardens*, p. 137, 1883; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 260, 1884; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii,

p. 154, 1891; *Blanford, Fauna Brit. India, Mamm.* p. 345, 1891; *Flower and Lydekker, Study of Mammals*, p. 345, 1891; *Lydekker, Horns and Hoofs*, p. 145, 1893, *Game Animals of India, etc.* p. 164, 1907, *Cat. Hume Bequest Brit. Mus.* p. 27, 1913; *Sclater and Thomas, Book of Antelopes*, vol. iv, p. 93, pl. lxxxvii, 1900; *Bentham, Cat. Asiat. Horns Ind. Mus.* p. 44, 1908; *Ward, Records of Big Game*, ed. 6, p. 303, 1910, ed. 7, p. 301, 1914; *Pocock, Proc. Zool. Soc.* 1910, p. 926; *Dodsworth, Journ. Bombay Nat. Hist. Soc.* vol. xxii, p. 747, 1914.

NILGAI.

Typical locality plains of Peninsular India; to which area the species is restricted, the range not including the trans-Indus districts, Eastern Bengal, or Malabar.

Shoulder-height about 4 feet 6 inches.

General colour iron-grey, tending to black on nose, cheeks, and neck, and to whitish grey above eyes; generally two spots on each cheek, lips, chin, and under surface of lower jaw, a gorget on throat, inner sides and backs of hams, a patch in region of groin, sides and under surface of tail, and two pairs of spots on pasterns above hoofs white, the upper hind spots sometimes forming a half-ring; ears greyish white, with a pair of black spots on outer edge in front; under-parts, with the exception of the region of the groin and a narrow median streak, and greater part of limbs, together with a tuft of long hair on throat, black; neck with a short black and white mane, terminating in a whorl on withers, behind which it is continued as a black spinal crest, gradually decreasing in height towards tail. Female smaller and slighter, with the iron-grey and black areas of male replaced by tawny fawn.

Fine horns measure from 8 to 10 (in one instance) inches in length, with a basal girth of from $6\frac{1}{2}$ to $9\frac{3}{4}$, and a tip-to-tip interval ranging from $3\frac{1}{2}$ to 8 inches.

648, *a*. Skin, mounted. India. *Purchased* (*Warwick*).

648, a^1. Skull, with horns. India. Figured in Gray's *Cat. Ungulata*, p. 141, fig. 2. *Purchased, before* 1852.

47. 5. 17. 20 (648, *a*). Skin, young. India.
Purchased (*Zoological Society*), 1847.

50. 11. 22. 168 (648, *b*). Skeleton. India.
Purchased (*Zoological Society*), 1850.

648, *c*. Skull, with horns, immature. India.
Purchased, about 1850.

56. 9. 22. 10 (658, d^1). Skull, with horns. India, probably Punjab; collected by Gen. Abbott. *Purchased*, 1856.

60. 4. 22. 1 (548, *e*). Skull, female. India.
Purchased (*Stevens*), 1860.

89. 11. 20. 10–12. Three frontlets, with horns. Khatkote Jungle, Central Provinces.
Presented by Col. J. Evans, 1889

FIG. 36.—HEAD OF NILGAI (*Boselaphus tragocamelus*).

91. 4. 20. 1. Head, mounted. South of Mhow.
Presented by G. A Carmichael, Esq., 1891.

91. 8. 7. 49. Skull, with horns. Kheri, Oude.
Presented by A. O. Hume, Esq., C.B., 1891.

91. 8. 7. 50. Skull, with horns. Allyghur (Alighur).
Same history.

91. 8. 7. 51. Skull, with horns. Baraitch.
Same history.

96. 10. 27. 1. Skin, mounted. India.

Purchased (Zoological Society), 1896.

12. 31. 10. 15. Skull, with horns. Oude. In this specimen, which stands No. 10 in Ward's 1910 list, the horns measure 9 inches in length by $6\frac{5}{8}$ in girth, with a tip-to-tip interval of $3\frac{1}{2}$ inches.

Bequeathed by A. O. Hume, Esq., C.B., 1912.

12. 31. 10. 16. Skull, with horns. Oude. *Same history.*

Family II.—ANTILOCAPRIDÆ.

Closely allied to the *Bovidæ*, but the horns, which are of the same general type as those of that family, forked and annually deciduous. Lyon,* following Cope, considers that there is no sufficient reason for separating the one existing genus by which this family is represented from the *Bovidæ*. "Its true position," he remarks, "is clearly no more than an aberrant subfamily, *Antilocaprinæ* of the *Bovidæ*, . . . the essential characters of the subfamily being horns deciduous, with a characteristic branch or prong in front, and absence of annual rings of growth at base of horn."

On the other hand, Matthew,† after first provisionally referring it to a separate family—*Merycodontidæ*—apparently considers that the American Tertiary genus *Merycodus*, which has antlers instead of horns, should be included in the *Antilocapridæ*. Certain other North American Tertiary (Pleistocene) ruminants, described as *Ilingoceros* and *Sphenophalos*, and at first regarded as referable to the *Tragelaphinæ*, have been tentatively transferred to the present family,‡ the definition of which will have to be materially modified if any or all of the above are rightly included.

The distribution is restricted to North America.

* *Proc. U.S. Nat. Mus.* vol. xxxiv, p. 398, 1900.

† *Bull. Amer. Mus. Nat. Hist.* vol. xx, p. 102, 1904, and vol. xxiv, p. 561, 1908.

‡ Merriam, *Pub. Univ. California, Bull. Dep. Geol.* vol. vi, p. 292, 1911.

Genus ANTILOCAPRA.

Antilocapra, *Ord, Journ. Phys.* vol. lxxxvii, p. 149, 1818; *Elliot Synop. Mamm. N. Amer.* (*Field Mus. Zool. Pub.* vol. ii) p. 43, 1901; *Matthew, Bull. Amer. Mus. Nat. Hist.* vol. xx, p. 102, 1904, vol. xxiv, p. 561, 1908; *Lyon, Proc. U.S. Nat. Mus.* vol. xxiv, p. 397, 1908; *Pocock, Proc. Zool. Soc.* 1910, p. 935; *Miller, List N. Amer. Mamm.* (*Bull. U.S. Nat. Mus.* no. 79), p. 393, 1912.

Dicranocerus, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 169, vol. v, p. 322,* 1827.

Horns (absent or rudimentary in females) forked on the front edge at about one-third their height, upright, compressed at base, terminally conical and recurved, smooth and devoid of rings of growth throughout their length; muffle hairy, with the exception of a narrow line between nostrils; no face-glands or inguinal glands, but a median dorsal gland on loins, and glands in both pairs of hoofs; hair stiff, coarse, and bristly, usually elongated on nape of neck into a short mane, and erectile and eversible on rump; tail very short; lateral hoofs wanting.

Distribution that of the single species.

ANTILOCAPRA AMERICANA.

Antilope americana, *Ord, Guthrie's Geography*, 2nd Amer. ed. pp. 292 and 308, 1815.

Cervus hamatus, *Blainville, Bull. Soc. Philom.* 1816, p. 73.

Antilocapra americana, *Ord, Journ. Phys.* vol. lxxxvii, p. 149, 1818, vol. lxxxviii, p. 314, 1819, *Oken's Isis*, 1819, p. 1105; *Gray, List Osteol. Brit. Mus.* p. 58, 1843, *Ann. Mag. Nat. Hist.* ser. 1, vol. xviii, p. 232, 1846, *Proc. Zool. Soc.* 1849, p. 137, *Knowsley Menagerie*, p. 19, 1850, *Cat. Ungulata Brit. Mus.* p. 117, 1852, *Cat. Ruminants Brit. Mus.* p. 63, 1872, *Hand-List Ruminants Brit. Mus.* p. 135, 1873; *Audubon and Bachman, Quadr. N. America*, vol. ii, p. 189, 1851; *Baird, Mamm. N. America*, p. 666, 1857, *Rep. U.S. Mexican Bound. Survey*, vol. ii, p. 51, 1858; *Cassin, U.S. Explor. Exped., Mamm.* p. 63, 1858; *Weinland, Zool. Garten*, vol. iv, p. 225, 1863; *Martin, ibid.* vol. v, p. 251, 1864; *Sclater, Proc. Zool. Soc.* 1865, p. 60, pl. iii; *Bartlett, ibid.* 1865, p. 718; *Canfield, ibid.* 1866, p. 105; *Coues, Amer. Nat.* vol. i, p. 539, 1868; *Hays, ibid.* vol. ii, p. 131, 1869; *Cooper, ibid.* vol. ii, p. 537, 1869; *Hinman, ibid.* vol. ii, p. 654, 1869; *Murie, Proc. Zool. Soc.* 1870, p. 334; *Caton, Antelope*

* Misprinted 312.

and Deer of N. America, p. 21, 1877, ed. 2, p. 21, 1884; *Williston, Amer. Nat.* vol. xi, p. 599, 1877; *Endlich, ibid.* vol. xii, p. 557, 1878; *Cope, ibid.* vol. xii, p. 557, 1878, vol. xxii, p. 1081, 1888; *Forbes, Proc. Zool. Soc.* 1880, p. 540, 1882, p. 1; *Alston, Biol. Centr.-Amer.* p. 112, 1882; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 277, 1884; *True, Proc. U.S. Nat. Mus.* vol. vii, p. 592, 1885; *H. L. Ward, Science*, vol. xiii, p. 70, 1889; *Merriam, N. Amer. Fauna*, p. 78, 1890, *Proc. Biol. Soc. Washington*, vol. xiv, p. 13, 1901; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 171, 1891; *Marshall and Pohlig, Zool. Garten*, 1891, p. 97; *Flower and Lydekker, Study of Mammals*, p. 333, 1891; *Allen, Bull. Amer. Mus. Nat. Hist.* vol. viii, p. 52, 1896; *Elliot, Synop. Mamm. N. America* (*Field Mus. Zool. Pub.* vol. ii), p. 43, 1901, *Check-List Mamm. N. Amer.* (*op. cit.* vol. vi) p. 51, 1905, *Cat. Mamm. Field Mus.* (*op. cit.* vol. viii) p. 53, 1907; *Lydekker, Game Animals of Europe, etc.* p. 333, 1901; *Stone and Cram, American Animals*, p. 54, 1903; *Matthew, Bull. Amer. Mus. Nat. Hist.* vol. xx, p. 104, 1904; *Pocock, Proc. Zool. Soc.* 1905, vol. i, p. 191, 1910, p. 935; *Seton, Scribner's Mag.* vol. xl, p. 33, 1906; *Mearns, Mamm. Mexican Bound. U.S.* (*Bull. U.S. Nat. Mus.* no. 56) p. 224, 1907; *Lyon, Proc. U.S. Nat. Mus.* vol. xxxiv, p. 398, 1908; *Ward, Records of Big Game*, ed. 6, p. 118, 1910, ed. 7, p. 116, 1914; *Miller, List N. Amer. Mamm.* (*Bull. U.S. Nat. Mus.* no. 79) p. 393, 1912.

Antilope furcifer, *H. Smith, Trans. Linn. Soc.* vol. xiii, p. 28, pl. iii, 1822, *Griffith's Animal Kingdom*, vol. iv, p. 170, vol. v, p. 323, 1827.

Antilope (Dicranocerus) furcifer, *H. Smith, Griffith's Animal Kingdom*, vol. v, pp. 322 and 323, 1827.

(?) Antilope palmata, *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 169, 1827.*

Antilocapra furcifer, *Brookes, Cat. Mus.* p. 64, 1828; *Gray, List Mamm. Brit. Mus.* p. 170, 1847.

Dicranoceros furcifer, *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 193, pl. xxii, 1835.

PRONGHORN, PRONGBUCK or AMERICAN ANTELOPE.

Typical locality the Missouri plains; the range extending from the valley of the Saskatchewan—lat. 53 N.—southwards to Mexico, and from the plains of the Missouri westwards to the Rocky Mountains and the Cascade Range in Oregon and Washington.

Somewhat antelope-like, with relatively long limbs; shoulder-height about 36 inches; general colour yellowish rufous, with a band on forehead between eyes, a patch below each ear, and nose sooty brown; lips, chin, sides of lower part of head, three bands on throat and chest, the first of which

* If identical with this species, the locality (Baffin Bay) must be wrong.

extends to base of ears, a large rump-patch, and under-parts white.

The three closely allied races into which the species has been divided are distinguished as follows:—

A. Ears bordered above with narrow black line; rufous of tail extending part way into rump-patch.
   a. Colour deeper; mane well developed..... *A. a. americana.*
   b. Colour paler; mane rudimentary or wanting *A. a. mexicana.*

B. Ears with heavy black border and white terminal third blackish externally; rufous of tail extending forwards to join that of back, and thus completely dividing rump-patch..... *A. a. peninsularis.*

A.—Antilocapra americana americana.

Antilocapra americana americana, *Miller, List N. Amer. Mamm.* p. 393, 1912.

Typical locality as above.

General colour bright and deep; margins of upper part of ears narrowly bordered with black; mane well developed; rufous of tail intruding into hind half of rump-patch, but not dividing it into two halves.

Fine horns measure from 15 to 17¼ (in one case 19) inches in length, with a basal girth of from 5½ to 6½ (7½ in one case), and a tip-to-tip interval ranging from 5½ to 17½ inches.

43. 11. 28. 3 (625, *b*). Skin, immature, mounted. North America. *Presented by the Hudson Bay Company*, 1843.

46. 3. 17. 11. Skull, female, immature. North America. From an old skin (No. 43. 11. 28. 2). *Same history.*

60. 2. 5. 11. Skull, with horns. North America. *Purchased* (*Gerrard*), 1860.

60. 2. 5. 12. Skull, with horns. North America. *Same history.*

72. 5. 6. 3. Skin, female, mounted, and skeleton. North America. *Purchased* (*Zoological Society*), 1852.

72. 12. 12. 2. Skin, mounted. Yellowstone. *Purchased* (*H. Ward*), 1872.

76. 3. 15. 4. Skeleton, with horns, mounted. Yellowstone. *Purchased* (*H. Ward*), 1876.

91. 9. 1. 1. Head, mounted. Cabin Creek, Upper Yellowstone Valley, Montana; collected by E. S. Cameron, Esq.
Purchased, 1891.

91. 9. 1. 2. Head, female, mounted. Same locality and collector. *Same history.*

FIG. 37.—HEAD OF PRONGHORN OR PRONGBUCK (*Antilocapra americana*).

96. 2. 15. 1–2. Two frontlets, male and female, with horns. Elkhead Creek, Colorado.
Presented by A. W. W. Brown, Esq., 1896.

5. 2. 12. 1. Head, female, mounted. North America.
Presented by J. Turner Turner, Esq., 1905.

5. 5. 14. 1. Head, mounted (fig. 37). North America.
Presented by Capt. C. Pearson, 1905.

B.—Antilocapra americana mexicana.

Antilocapra americana mexicana, *Merriam, Proc. Biol. Soc. Washington*, vol. xiv, p. 34, 1901; *Lydekker, Game Animals of Europe, etc.* p. 338, 1901; *Elliot, List Mamm. Field Mus.* p. 53, 1907; *Miller, List N. Amer. Mamm.* p. 394, 1912.

Typical locality Sierra en Media, Chihuahua, Mexico.

Type in U.S. National Museum, Washington.

Colour paler than in typical race, and mane rudimentary or wanting.

89. 12. 7. 26. Skin, mounted, and skull. Mexico, probably Sonora. *Presented by the Mexican Museum*, 1889.

C.—Antilocapra americana peninsularis.

Antilocapra americana peninsularis, *Nelson, Proc. Biol. Soc. Washington*, vol. xv, p. 107, 1912; *Miller, List N. Amer. Mamm.* p. 394, 1912.

Typical locality Lower California.

Type in U.S. National Museum, Washington.

Colour much as in typical race, but ears distinctly darker, with broad black margins in the upper third, the whole surface of which has a blackish suffusion, and rufous of tail extending forwards to join that of back, so as completely to divide rump-patch.

No specimen in collection.

Family III.—GIRAFFIDÆ.

Large-sized Pecora in which the paired cranial appendages take the form of short, persistent, reclined, skin-covered conical prominences, capped in one genus with bare bone; such appendages being present either in both sexes or in males alone. Upper canines wanting; lower canines with cleft, bilobate crowns (fig. 38); cheek-teeth more or less brachyodont, with rugose enamel. Basicranial axis nearly straight (instead of fore portion being sharply bent down-

wards, as in *Bovidæ* and *Antilocapridæ*). Lateral toes and their supporting metapodials * wanting.

Gall-bladder normally absent, at least in typical genus.† Placenta with numerous cotyledons. Vertebræ: C. 7, D. 14, L. 5, S. 3, C. 20. Dentition: *i.* $\frac{0}{3}$, *c.* $\frac{0}{1}$, *p.* $\frac{3}{3}$, *m.* $\frac{3}{3}$.

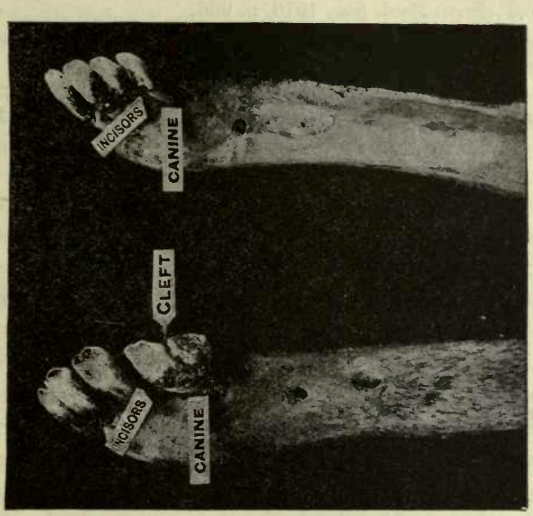

FIG. 38.—LOWER FRONT TEETH OF ELK (*A*) AND GIRAFFE (*B*), to show the difference in the form of the canine.

Distribution restricted at the present day to Ethiopian Africa; but during the early Pliocene including Greece, Samos, Bessarabia, Persia, India, China, etc.

The two existing genera are distinguishable as follows:—

A. Size very large; neck and limbs greatly elongated; horns in both sexes; males larger than females; ears narrow; coloration in the shape of large dark blotches, or "spots," separated by lighter intervals of varying width *Giraffa.*

B. Size smaller; neck and limbs of more normal proportions; horns present only in males, which are smaller than females; ears broad; coloration uniform on greater portion of body, striped on hind-quarters and legs..... *Okapia.*

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* = metacarpals + metatarsals.

† See Garrod, *Proc. Zool. Soc.* 1877, p. 4. Owen had previously recorded the occurrence of a gall-bladder in one giraffe dissected by him. The viscera of the okapi are unknown.

I. Genus GIRAFFA.

Giraffa, *Zimmermann, Geogr. Geschichte*, vol. ii, p. 125, 1780; *Storr, Prodromus Meth. Mamm.* p. 41, 1780; *Major, Proc. Zool. Soc.* 1891, p. 315; *W. L. Sclater, Fauna S. Africa, Mamm.* vol. i, p. 259, 1900; *Lankester, Trans. Zool. Soc.* vol. xiv, p. 303, 1902; *Pocock, Proc. Zool. Soc.* 1910, p. 936.

Camelopardalis, *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 181, 1788; *Rütimeyer, Abh. schweiz. pal. Ges.* vol. iv, p. 27, 1877.

Orasius, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 744, 1816; *Wagner, Sitzber. K. Bayer. Ak. Wiss.* vol. ii, p. 78, 1861.

The typical genus.

Size very large, neck and limbs greatly elongated, so that the height to the crown of the head may reach 17 or 18 feet; males larger than females; a pair of fronto-parietal horns, surmounted by tufts of hair, in both sexes, and typically, an unpaired anterior horn; ears narrow; skull relatively deep, without lachrymal depressions, but with small lachrymal vacuities, which become more or less nearly obliterated in old individuals; no glands on face, in groin, or between hoofs; four teats; coloration either a network of white or whitish lines on a rufous, tawny, or dark brown ground, or brown blotches on a fawn ground, the one type of pattern gradually passing into the other; tail medium, tufted.

Distribution, at the present day, the greater part of Ethiopian Africa, exclusive of the equatorial forest region and the country south of the Orange River. In the Lower Pliocene Greece, Samos, Bessarabia, Persia, northern India, and China.

I. GIRAFFA RETICULATA.

Giraffa camelopardalis reticulata, *de Winton, Ann. Mag. Nat. Hist.* ser. 7, vol. iv, p. 211, 1899; *Trouessart, La Nature*, vol. xxx, p. 340, 1908.

Giraffa reticulata, *Thomas, Proc. Zool. Soc.* 1901, vol. i, p. 476; *Major, ibid.* 1902, vol. ii, p. 78; *Renshaw, Nat. Hist. Essays*, p. 101, 1904; *Lydekker, Proc. Zool. Soc.* 1904, vol. i, p. 204, *Game Animals of Africa*, p. 374, 1908, *Suppl.* p. 5, 1902; *Ward, Records of Big Game*, ed. 6, p. 117, 1910; *M. de Rothschild and Neuville, Ann. Sci. Nat., Zool.* ser. 9, vol. xiii, p. 1, pl. ii, fig. 2, 1911.

Giraffa reticulatus, *Lankester*, *Proc. Zool. Soc.* 1907, p. 125.

?) Giraffa hagenbecki, *Knottnerus-Meyer*, *Zool. Anz.* vol. xxxv, p. 800, 1910; *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. xiii, p. 12, 1911 (as a form of *reticulata*); *Lydekker*, *Game Animals of Africa*, *Suppl.* p. 20, 1911.

Typical locality southern Somaliland, whence the range extends to Gallaland, and, through the Lake Rudolf district, to the Guaso-nyiro, British East Africa, and perhaps to Kenia.

General colour typically deep liver-red, marked with a coarse net-work of narrow white lines, the subquadrangular

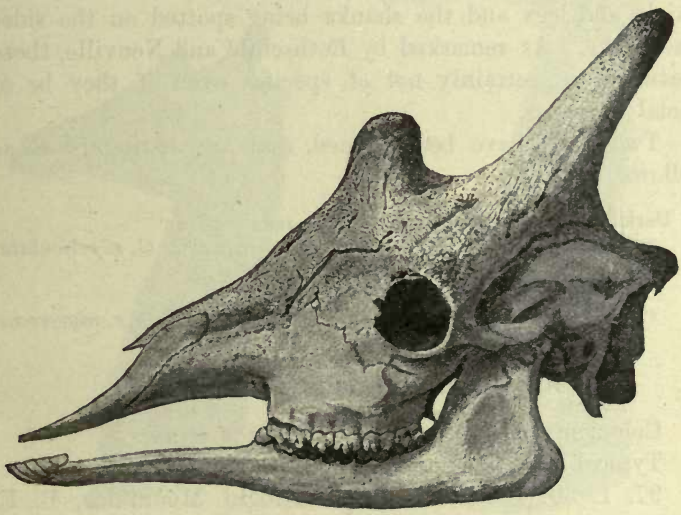


Fig. 39.—Skull of Netted Giraffe (*Giraffa reticulata*).
From de Winton, *Proc. Zool. Soc.* 1907.*

meshes of which gradually decrease in size towards the head, although they are everywhere large; on the head the red areas change to rounded chestnut spots on a fawn ground; backs of ears white, as are shanks (in adult males), the hind pair more or less spotted superiorly, especially in females. Anterior horn well developed (fig. 39). The essential feature of the colour-pattern is, so to speak, the superposition of a coarse white network on a liver-red ground, so that it cannot be described as spotted.

* There named *G. camelopardalis*.

As this type of colouring is but an extreme development of that of the typical race of *camelopardalis*, there are grounds for regarding *reticulata* as a race of the former rather than as a distinct species. On the other hand, there appears to be no evidence of gradation between *reticulata* and *camelopardalis* in those parts of British East Africa where they occupy contiguous areas.

The so-called *G. hagenbecki* was named on the evidence of an immature female from Gallaland, living in Hagenbeck's menagerie at Stellingen. The general colour is described as lustreless brown; the dark areas becoming smaller on the thighs and legs, and the shanks being spotted on the sides and backs. As remarked by Rothschild and Neuville, these features are certainly not of specific, even if they be of racial value.

Two races have been named, and are distinguished as follows:—

A. Dark areas large and uniform liver-red, with or without a small central white spot..... *G. r. reticulata.*

B. Dark areas smaller and brownish rufous, with a black suffusion and a central blackish streak or star..... *G. r. nigrescens.*

A.—Giraffa reticulata reticulata.

Colouring that given under heading of species.

Typical locality Somaliland.

97. 1. 30. 1. Skull. East Loroghi Mountains, B. E. Africa. *Presented by A. H. Neumann, Esq.*, 1897.

98. 3. 28. 1. Skin of upper part of head and neck. Same locality. *Same donor*, 1898.

98. 4. 28. 1. Skull and head-skin. N. E. Africa. *Presented by H. S. H. Cavendish, Esq.*, 1898.

98. 7. 2. 6. Skull, head-skin, tail, and one hoof. Near Lake Baringo, B. E. Africa. *Bequeathed by H. Andrew, Esq.*, 1898.

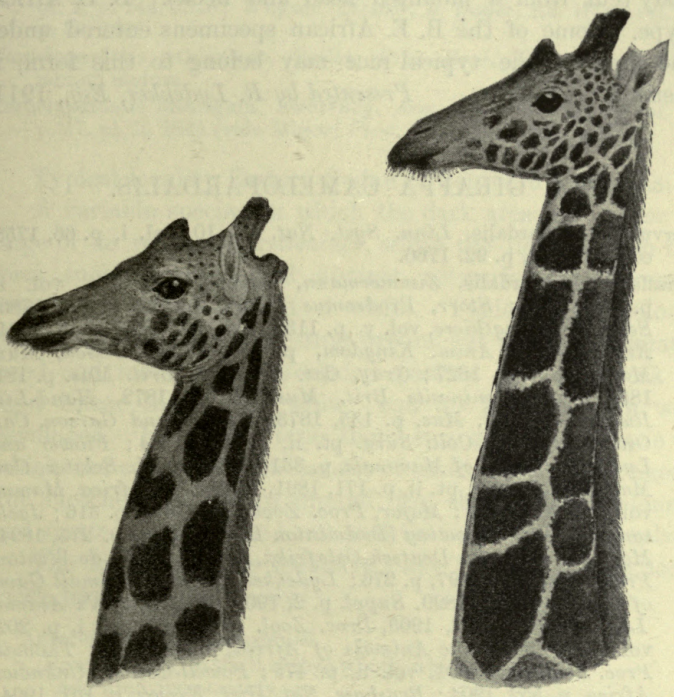
98. 7. 2. 7. Tail. Same locality. *Same history.*

99. 7. 8. 5. Skull and head-skin. One hundred miles east of Loroghi. *Presented by the Lord Delamere*, 1899.

99. 7. 8. 6. Head and neck, mounted. East Central Africa. *Same history.*

7. 12. 16. 2. Skin of back and tail. Southern Abyssinia.
Presented by J. Rowland Ward, Esq., 1907.

12. 2. 24. 1–2. Two skulls and skins, immature. Archer's Post, Guaso-nyiro, B. E. Africa.
Presented by the Game-Warden, B. E. Africa, 1912.



A *B*

Fig. 40.—Head and Neck of Baringo Giraffe (*Giraffa camelopardalis rothschildi*), *A*, and of Netted Giraffe (*Giraffa reticulata*), *B*.

12. 2. 24. 3. Skin, young. Same locality. *Same history.*
12. 2. 24. 4–5. Two head-skins. Same locality.
Same history.

B.—Giraffa reticulata nigrescens.

Giraffa reticulata nigrescens, *Lydekker*, *Nature*, vol. lxxxvii, p. 484, 1911.

Typical locality British East Africa, probably the district north of Mount Kenia.

Lines of white network rather wider than in typical race, and the dark areas rather smaller, and brownish rufous in colour, with a suffusion of blackish, and a distinct blackish streak or star in the centre of each.

11. 10. 23. 1. Portion of skin from the fore part of the body (cut from a mounted head and neck). B. E. Africa. Type. Some of the B. E. African specimens entered under the head of the typical race may belong to this form, if distinct. *Presented by R. Lydekker, Esq.*, 1911.

II. GIRAFFA CAMELOPARDALIS.

Cervus camelopardalis, *Linn. Syst. Nat.* ed. 10, vol. i, p. 66, 1758, ed. 12, vol. i, p. 92, 1766.

Giraffa camelopardalis, *Zimmermann, Geogr. Geschichte*, vol. ii, p. 125, 1780; *Storr, Prodromus Meth. Mamm.* p. 41, 1780; *Schreber, Säugthiere*, vol. v, p. 1139, pls. cclv and cclv*, 1784; *Kerr, Linn.'s Anim. Kingdom*, p. 305, 1792; *Lesson, Man. Mamm.* p. 369, 1827; *Gray, Cat. Ungulata Brit. Mus.* p. 181, 1852, *Cat. Ruminants Brit. Mus.* p. 65, 1872, *Hand-List Ruminants Brit. Mus.* p. 135, 1873; *Flower and Garson, Cat. Osteol. Mus. R. Coll. Surg.* pt. ii, p. 281, 1884; *Flower and Lydekker, Study of Mammals*, p. 331, 1891; *W. L. Sclater, Cat. Mamm. Ind. Mus.* pt. ii, p. 171, 1891, *Fauna S. Africa, Mamm.* vol. i, p. 259, 1900; *Major, Proc. Zool. Soc.* 1891, p. 316; *Jackson, Big Game Shooting* (*Badminton Libr.*), vol. i, p. 275, 1894; *Matschie, Säugeth. Deutsch-Ostafrika*, p. 315, 1895; *de Winton, Proc. Zool. Soc.* 1897, p. 276; *Lydekker, Great and Small Game of Africa*, p. 488, 1899, *Suppl.* p. 2, 1902; *Hutchinson's Animal Life*, vol. ii, p. 122, 1903, *Proc. Zool. Soc.* 1904, vol. i, p. 202, vol. ii, p. 339, *Game Animals of Africa*, p. 350, 1908; *Thomas, Proc. Zool. Soc.* 1901, vol. ii, p. 475; *Powell-Cotton, Unknown Africa*, p. 552, 1904; *Renshaw, Nat. Hist. Essays*, p. 101, 1904; *Elliot, Cat. Mamm. Field Mus.* (*Zool. Pub. Field Mus.* vol. viii) p. 52, 1907; *Scherren, Proc. Zool. Soc.* 1908, p. 403; *Ward, Records of Big Game*, ed. 6, p. 116, 1910; *Pocock, Proc. Zool. Soc.* 1910, p. 936; *Cabrera, Cat. Mét. Mam. Madrid Mus.* p. 129, 1912.

Camelopardalis giraffa, *Gmelin, Linn.'s Syst. Nat.* vol. i, p. 181, 1788; *Illiger, Prodromus Syst. Mamm.* p. 104, 1811; *G. Fischer, Zoognosia*, vol. iii, p. 473, 1814; *Desmarest, Nouv. Dict. Hist. Nat.* vol. i, p. 164, 1817; *F. Cuvier, Hist. Nat. Mamm.* vol. iv, pl. 412 (332), 1824; *I. Geoffroy, Dict. Class. Hist. Nat.* vol. i, p. 355, 1825; *Cretzschmar, Atlas* to *Rüppell's Reise nordlich. Afrika*, p. 23, pls. viii and ix, 1826; *E. Geoffroy, Ann. Sci. Nat.* vol. xi, p. 222, 1827; *H. Smith, Griffith's Animal Kingdom*, vol. iv, p. 150, vol. v, p. 320, 1827; *J. B. Fischer, Synop. Mamm.* p. 455, 1830; *Smuts, Enum. Mamm. Cap.* p. 62, 1832; *A. Smith, S. African Quart. Journ.* vol. ii, p. 184, 1834; *Harris, Game and Wild Anim. S. Africa*, pl. xi, 1840; *Lesson, Nouv. Tabl. Règne*

Anim. p. 168, 1842; *Gray, List Mamm. Brit. Mus.* p. 170, 1843; *Sundevall, K. Svenska Vet.-Ak. Handl.* 1842, p. 243, 1844; *Heuglin, Fauna roth. Meer*, p. 16, 1861, *Reisen Nordost Africa*, p. 133, 1877; *Jentink, Cat. Ostéol. Leyden Mus.* (*Mus. Pays-Bas*, vol. ix), p. 156, 1887; *Bryden, Nature and Sport in S. Africa*, p. 129, 1897; *Garrod, Proc. Zool. Soc.* 1877, pp. 2 and 4.

Orasius camelopardalis, *Oken, Lehrbuch Naturgeschichte*, vol. iii, pt. 2, p. 744, 1816; *Wagner, Sitzber. k. Bayer. Ak. Wiss.* vol. ii, p. 78, 1861.

Camelopardalis æthiopicus, *Ogilby, Proc. Zool. Soc.* 1836, p. 134, nomen nudum.

Camelopardalis biturigum, *Duvernoy, Ann. Sci. Nat.* ser. 3, vol. 1 p. 47, pl. ii, 1844 (vide *Major, Proc. Zool. Soc.* 1891, p. 316).

Typical locality Eastern Sudan or Southern Abyssinia.

A variable species in which the dark areas are never so large or so red as in *reticulata*, while the light ones do not form such a coarse and distinct network, and are very frequently tawny instead of white. Typically the colour-pattern consisting of a chestnut ground cut up into moderate-sized and more or less rounded patches by a network of light lines; the shanks white; and the anterior horn well developed. From this type there is a gradation to one in which the colour-pattern consist of small brownish or chestnut blotches on a fawn ground, the shanks fawn-coloured and spotted down to the hoofs, and the anterior horn obsolete.

The following is a tentative "key" to the named local races, based on males only:—

A. Anterior horn well developed.
  a. Front shanks (in adult males) wholly white, and hind ones mainly so.
    a^1. No occipital horns.
      a^2. Colour richer.
        a^3. Spots large on upper part of fore-legs..... *G. c. camelopardalis.*
        b^3. Spots becoming suddenly small on upper part of fore-legs..... *G. c. antiquorum.*
      b^2. Colour paler ..... *G. c. peralta.*
    b^1. Occipital horns present.
      a^4. Occipital horns small, a process over right orbit; spots rufous brown; sides of face not spotted above line connecting eye with angle of mouth *G. c. cottoni.*
      b^4. Occipital horns larger, typically no process over right orbit; spots darker; sides of face fully spotted in sub-adult males..... *G. c. rothschildi.*

b. Shanks coloured, or spotted, or both together.
*a*⁵. Ground-colour lighter.
*a*⁶. Spots stellate; shanks sometimes white, spotted superiorly, always fully so in immature individuals; anterior horn medium or small..... *G. c. tippelskirchi.*
*b*⁶. Spots not distinctly stellate.
*a*⁷. Anterior horn large; shanks spotted to hoofs ..... *G. c. congoënsis.*
*b*⁷. Anterior horn smaller; shanks uniformly fawn..... *G. c. thornicrofti.*
*b*⁵. Ground-colour darker ..... *G. c. infumata.*

B. Anterior horn rudimentary or obsolete; shanks coloured and fully spotted.
a. Occipital horns strongly developed, colour-pattern substellate ..... *G. c. wardi.*
b. Occipital horns (so far as known) obsolete.
a'. Colour-pattern approximating to the netted type ..... *G. c. angolensis.*
b'. Colour-pattern of the blotched type..... *G. c. capensis.*

A.—Giraffa camelopardalis camelopardalis.

"Nubian Giraffe," *Owen, Trans. Zool. Soc.* vol. ii, p. 217, 1838.
Giraffa camelopardalis typica, *Bryden, Great and Small Game of Africa*, p. 489, 1899; *Lydekker, Suppl. to do.* p. 4, 1902, *Proc. Zool. Soc.* 1904, vol. i, p. 205, pls. ix and x; *Alexander, From Niger to Nile*, vol. ii, p. 390, 1907; *Trouessart, La Nature*, vol. xxx, p. 342, 1908; *Ward, Records of Big Game*, ed. 6, p. 116, 1910.

Typical locality Eastern Sudan, or perhaps Abyssinia; the range extending, according to Trouessart, into the Timbuktu district of the Western Sudan.

Colour-pattern approximating to that of *G. reticulata*, but the coloured areas smaller and sandy or chestnut, and the light lines buffish white; front of face sparsely, and sides of same fully spotted; large spots on shoulders and upper part of fore-legs; shanks white, the hind pair more or less spotted superiorly. Anterior horn well developed, but no occipital horns.

Two types of colour-pattern occur in the giraffes of the Eastern Sudan, namely, that just described and the one recorded under the next heading, but which represents the typical *C. giraffa* of Linnæus, it is impossible to decide.

Neither is there any definite information with regard to the precise habitat of the form here identified with the typical race.

55. 12. 26. 144. Skull, immature, female. North Africa. *Purchased* (*Zoological Society*), 1855.

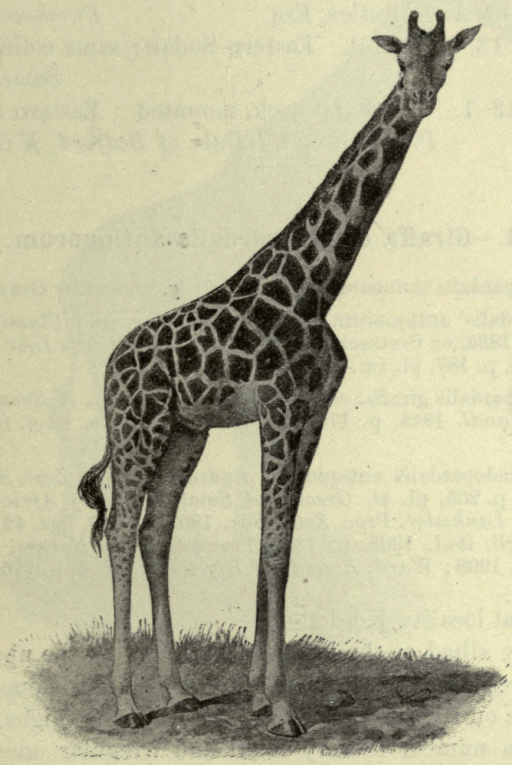


Fig. 41.—Nubian Giraffe (*Giraffa camelopardalis camelopardalis*).

671, *c*. Skeleton. North Africa. *Purchased* (*Warwick*).

73. 8. 29. 7 (671, *e*). Skeleton, mounted. Dembelas, Abyssinia. *Purchased* (*Gerrard*), 1873.

74. 11. 2. 1 (671, *f*). Skeleton, mounted. Setit Valley, Upper Atbara. *Purchased* (*Gerrard*), 1874.

99. 6. 18. 1. Piece of skin. Pibor Valley, Upper Sobat. *Presented by J. Rowland Ward, Esq.*, 1899.

1. 5. 14. 1. Skull, female. White Nile.
Presented by Major H. N. Dunn, 1901.

2. 11. 12. 1. Skull, two pieces of body-skin, tail, and fore-legs, with hoofs, female. Kodok (Fashoda), White.
Presented by Prince Henri of Liechtenstein, 1902.

2. 11. 13. 1. Piece of skin. Mongalla, Southern Sudan; collected by A. L. Butler, Esq. *Purchased*, 1902.

2. 11. 13. 2. Skull. Eastern Sudan; same collector.
Same history.

3. 8. 13. 1. Head and neck, mounted. Eastern Sudan.
Presented by the Duke of Bedford, K.G., 1903.

B.—Giraffa camelopardalis antiquorum.

(?) Camelopardalis sennaarensis, *E. Geoffroy*, quoted by Gray.

Camelopardalis antiquorum, *Swainson, Geogr. and Classif. Anim.* p. 95, 1835, ex Cretzschmar; *Jardine, Naturalist's Libr., Mamm.* vol. iii, p. 187, pl. xxi, 1835.

(?) Camelopardalis giraffa, *var.* æthiopica, *Sundevall, K. Svenska Vet.-Ak. Handl.* 1844, p. 174, 1846; *Thomas, Proc. Zool. Soc.* 1894, p. 136.

Giraffa camelopardalis antiquorum, *Lydekker, Proc. Zool. Soc.* 1904, vol. i, p. 205, pl. xi, *Great and Small Game of Africa*, p. 236, 1908; *Lankester, Proc. Zool. Soc.* 1907, p. 120, figs. 42 and 43; *Mitchell, ibid.* 1908, p. 135; *Trouessart, La Nature*, vol. xxx, p. 341, 1908; *Ward, Records of Big Game*, ed. 6, p. 116, 1910.

Typical locality Kordofan.

Nearly allied to the last, but the spots on the upper part of the fore-limbs—just above the line of the abdomen—and also those on the corresponding portion of the thighs, broken up into a number of very small and irregular ones, which contrast strongly with the larger ones above; similar spots also occurring on the under-parts and inner sides of the limbs, which are nearly white in the typical race. In both forms the colour-pattern of the females differs only in details from that of the males.

The specimen figured by Jardine, which is stated to have come from the district between Sennar and Dafur (i.e. practically Kordofan), may be taken as the type, since Cretzschmar's description, on which Swainson's name is based, is insufficient. That the colour-pattern in Jardine's

specimen was not an individual peculiarity, is indicated by its reappearance in the Kordofan example shown in fig. 42, which was living in London between 1902 and 1904.*

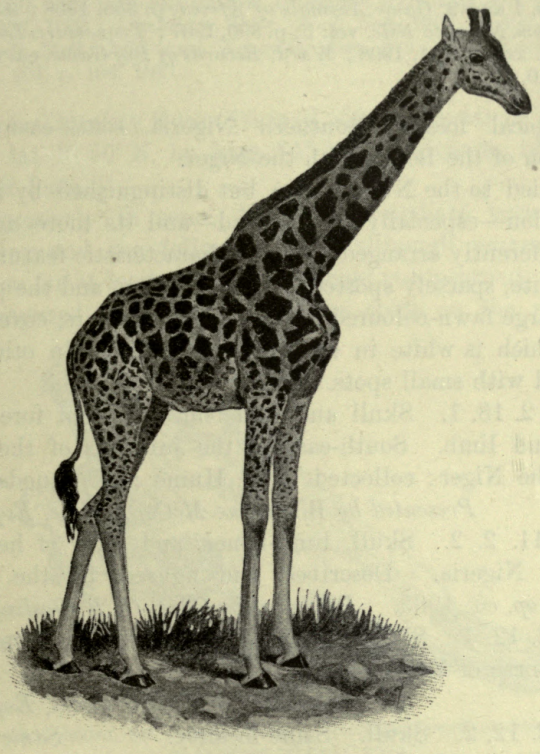


FIG. 42.—KORDOFAN GIRAFFE (*Giraffa camelopardalis antiquorum*).

13. 6. 1. 1. Skin, young, mounted. From an animal born in London Zoological Gardens.

Presented by the Rowland Ward Trustees, 1913.

Some of the Sudani specimens entered under the heading of the preceding race may belong to the present form.

* See Proc. Zool. Soc. 1902, vol. ii, p. 225, and 1904, vol. i, p. 206.

C.—Giraffa camelopardalis peralta.

Giraffa camelopardalis peralta, *Thomas*, *Proc. Zool. Soc.* 1898, p. 40; *Lydekker*, *ibid.* 1904, vol. i, p. 226, 1905, vol. i, p. 119, pl. xii, figs. 1 and 2, *Game Animals of Africa*, p. 356, 1908; *Alexander*, *From Niger to Nile*, vol. ii, p. 390, 1907; *Trouessart*, *La Nature*, vol. xxx, p. 341, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 116, 1910.

Typical locality Southern Nigeria, south-east of the junction of the Benue with the Niger.

Allied to the Nubian race, but distinguished by its paler coloration—especially on the head—and its more numerous and differently arranged spots, a characteristic feature being the white, sparsely spotted occipital region, and the presence of a large fawn-coloured patch below the ears, covering an area which is white in the Nubian race, and in other races marked with small spots.

98. 2. 18. 1. Skull and two bones of right fore and of left hind limb. South-east of the junction of the Benue with the Niger; collected by R. Hume McCorquodale, Esq. Type. *Presented by W. Hume McCorquodale, Esq.*, 1898.

4. 11. 2. 2. Skull, limb-bones, and skin of head and neck. Nigeria. Described and figured by the present writer, *op. cit.* 1905. *Presented by Capt. G. B. Gosling*, 1904.

6. 2. 12. 1. Skull and head-skin, young. Twenty-five miles north of Yola, Nigeria.

Presented by W. T. Gowers, Esq., 1906.

6. 2. 12. 2. Skull. Same locality. *Same history.*

7. 7. 8. 255. Skull and head-skin. Shari Valley; collected by Capt. G. B. Gosling.

Presented by the Alexander-Gosling Expedition, 1907.

7. 7. 8. 255, *a*. Two pieces of body-skin and tail. East of Sharna River, Northern Nigeria. *Same history.*

8. 11. 8. 1. Skull, imperfect, six-months' calf. Maidugari, Lake Chad; collected by Mr. — Hall.

Presented by J. Mc. W. Pollard, Esq., 1908.

8. 8. 12. 1. Skin, immature female, mounted. Ferli district, Senegambia. *By exchange* (*R. Ward, Ltd.*), 1908.

8. 8. 12. 2. Skull, skin, and hoofs. Nigeria.

Same history.

D.—Giraffa camelopardalis cottoni.

Giraffa camelopardalis cottoni, *Lydekker*, *Proc. Zool. Soc.* 1904, vol. i, p. 207, 1905, vol. i, pl. xii, *Game Animals of Africa*, p. 360, 1908; *Powell-Cotton*, *Unknown Africa*, p. 388, pl. facing p. 387, 1904; *Lankester*, *Proc. Zool. Soc.* 1907, p. 121, fig. 44; *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. xiii, p. 104, 1911.

Typical locality Koten Plain (2,550 feet), south of Toposa * (about lat. 3° 50′ N. by long. 34° 30′ E.), Uganda, lying due south of Lado.

Apparently in some degree intermediate between the preceding and the following race, although nearer to the latter, so far at least as the adult male is concerned.

Compared with *rothschildi*, the spots on the neck are

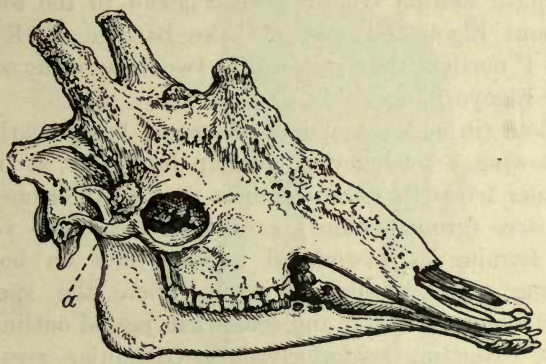


Fig. 43.—Skull of Toposa Giraffe (*Giraffa camelopardalis cottoni*). *a*, Azygous orbital "horn."

chestnut-brown instead of black, and more regular and quadrangular in form, without any tendency to be split up by lines radiating from the centre.

4. 1. 21. 1. Head and neck, mounted (fig. 45, *A*, p. 255), and skull (fig. 43). Koten Plain, south of Toposa, Uganda. Type; the skull has been cut, so that the frontal region is separate from the basal portion.

Presented by Major P. H. G. Powell-Cotton, 1904.

* Mis-spelt Topora in original description. Lankester, *op. cit.*, gave the locality of the type as Mount Elgon.

E.—Giraffa camelopardalis rothschildi.

"Five-horned Giraffe," *Thomas*, *Proc. Zool. Soc.* 1901, vol. ii, p. 474; *Johnston*, *Uganda Protectorate*, vol. i, pp. 26 and 377, 1902.

"Giraffe," *Ridewood*, *Proc. Zool. Soc.* 1904, vol. i, p. 151, figs. 4, 8 and 9; *Lankester*, *ibid.* 1907, p. 110, figs. 33 and 34.

Giraffa camelopardalis rothschildi, *Lydekker*, *Hutchinson's Animal Life*, vol. ii, p. 122, 1903, *Proc. Zool. Soc.* 1904, vol. i, p. 210, 1905, vol. i, p. 121, *Game Animals of Africa*, p. 358, 1908; *Powell-Cotton*, *Unknown Africa*, pl. facing p. 194, 1904; *Duerden*, *Rec. Albany Mus.* vol. ii, p. 95, 1907; *Trouessart*, *La Nature*, vol. xxx, p. 341, 1908; *Allen*, *Bull. Amer. Mus. Nat. Hist.* vol. xxvi, p. 157, fig. 2, 1909; *Ward*, *Records of Big Game*, ed. 6, p. 116, 1910; *Roosevelt*, *African Game Trails*, p. 487, 1910; *Hollister*, *Smithson. Misc. Collect.* vol. lvi, no. 2, p. 1, 1910; *M. de Rothschild and Neuville*, *Ann. Sci. Nat., Zool.* ser. 9, vol. xiii, p. 99, 1911, partim; *Cabrera*, *Cat. Mét. Mam. Madrid Mus.* p. 129, 1912.

Typical locality Guasin-gisha Plateau, to the south-east of Mount Elgon and west of Lake Baringo, B. E. Africa, nearly 1° north of the equator; the two areas being separated by the Elgeyo Range.

Colour (in male) very dark, the spots being nearly black, and showing a tendency to split up into stars, as indicated by lighter tripartite radiating lines in the larger ones; light interspaces (ground-colour), except on face, deep yellowish fawn, forming a network of narrow lines on body, but becoming much broader on neck, where the spots may assume a more irregular and somewhat jagged outline; sides of face, extending posteriorly in a triangular area behind ears (the backs of which are wholly white), whitish—and thus sharply contrasting with the neck—and fully spotted with black in subadult males, although in old males (fig. 40, *A*, p. 239) these more or less completely disappear above a line connecting the angle of the mouth with the eye; a spot on legs above knees and hocks chestnut, such light spots extending farther up on the hind than on the front legs; shanks white and unspotted. Skull with front horn strongly developed, and a pair of occipital horns behind the main pair; and there may be a pair of orbital horns.*

In subadult females (if rightly associated) the spots are reddish chestnut, and irregular, jagged, and somewhat star-

* In a specimen seen by the writer in 1914.

like in outline, the intervening spaces being light orange-fawn; light areas on neck very broad; white space round ears small; sides of face sparsely spotted.

Old females from the Guasin-gishu are stated to become very dark-coloured; and the males of the Baringo herd are reported to resemble those from the typical area. If the undermentioned Baringo female indicates a distinct form,

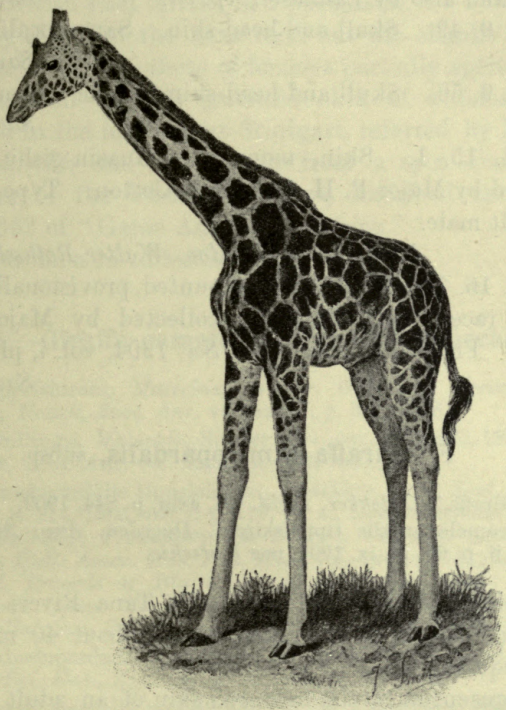


FIG. 44.—BARINGO GIRAFFE (*Giraffa camelopardalis rothschildi*).

the present race should be called the Guasin-gishu, or Elgon, in place of the Baringo, giraffe.

98. 7. 2. 4. Head-skin and tail. One hundred miles up the Uganda Railway, B. E. Africa.
Presented by H. Andrew, Esq., 1898.

98. 7. 2. 5. Skull. Mombasa. *Same history.*

0. 3. 18. 3. Skull and skin, female. Athi Plains, B. E. Africa. *Presented by S. L. Hinde, Esq.*, 1900.

0. 3. 18. 10. Fœtal skeleton, in spirit. B. E. Africa.
Same history.

1. 8. 9. 47. Head and neck, mounted (fig. 40, *A*, p. 239), and skull of very old male. Guasin-gishu Plateau.
Presented by Sir H. H. Johnston, G.C.M.G., K.C.B., 1901.

1. 8. 9. 48. Skull and head-skin. Same locality. The skull, which has been sectionised, is figured by Ridewood, *op. cit.*, and also by Lankester, *op. cit.* *Same history.*

1. 8. 9. 49. Skull and head-skin. Same locality.
Same history.

1. 8. 9. 50. Skull and head-skin, female. Same locality.
Same history.

3. 4. 15. 1. Skin, mounted. Guasin-gishu Plateau; collected by Major P. H. G. Powell-Cotton. Type (fig. 44). Subadult male.
Presented by the Hon. Walter Rothschild, 1903.

3. 4. 16. 1. Skin, female, mounted, provisionally referred to this race. Lake Baringo; collected by Major Powell-Cotton. Figured in *Proc. Zool. Soc.* 1904, vol. i, pl. xiii.
Same history.

F.—Giraffa camelopardalis, subsp.

"Tana Giraffe," *Lydekker*, *Field*, vol. cxiii, p. 844, 1909.
Giraffa camelopardalis tippelskirchi, *Duerden*, *Ann. Albany Mus.* vol. ii, p. 96, pl. ix, 1907, nec *Matschie*.

Typical locality south side the Tana River, south-east of Mount Kenia, British East Africa, about 40 miles south of the equator.

Represented by the mounted skin of an adult male, shot by John Hall, Esq., and now deposited in the Ipswich Museum, and by the mounted head and neck of a female from the same locality in the Albany Museum, described and figured by Duerden, *loc. cit.*

Allied to *rothschildi*, but the female as dark as the male, with very similarly shaped spots, and the shanks of the legs fawn-coloured and profusely spotted with tan down to the pasterns.

No specimen in collection.

G.—Giraffa camelopardalis, subsp.

Giraffa tippelskirchi, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1898, p. 77, partim.

Giraffa camelopardalis tippelskirchi, *Lydekker*, *Proc. Zool. Soc.* 1905, vol. i, p. 214, *Game Animals of Africa*, p. 363, 1908, partim.

Inhabits the district between the Victoria Nyanza and Nairobi, British East Africa, and Masailand.

Nearly allied to the next race, but the shanks of adult males wholly white; those of females partially spotted.

Represented by the mounted skin of a female from Masailand in the museum at Stuttgart, referred by Matschie to *tippelskirchi*, and by a male from a spot about forty miles east of the Victoria Nyanza, described and figured on page 363 of "Game Animals of Africa."

No specimen in collection.

H.—Giraffa camelopardalis tippelskirchi.

Giraffa tippelskirchi, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1898, p. 77; *Noack*, *Zool. Anz.* vol. xxxiii, p. 356, 1908.

Giraffa schillingsi, *Matschie*, *Sitzber. Ges. nat. Freunde*, 1898, p. 77; *Noack*, *Zool. Anz.* vol. xxxiii, p. 356, 1908.

Giraffa camelopardalis tippelskirchi, *Lydekker*, *Proc. Zool. Soc.* 1894, vol. i, p. 214, 1905, vol. i, p. 119, pl. xi, *Game Animals of Africa*, p. 361, 1908; *Trouessart*, *La Nature*, vol. xxx, p. 341, 1908; *Allen*, *Bull. Amer. Mus. Nat. Hist.* vol. xxvi, p. 159, fig. 2, 1909; *Ward*, *Records of Big Game*, ed. 6, p. 116, 1910; *Roosevelt*, *African Game Trails*, p. 487, 1910; *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. xiii, p. 108, 1911.

Giraffa camelopardalis schillingsi, *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. xiii, p. 109, 1911.

Giraffa camelopardalis rothschildi, *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. iii, pl. ii, fig. 1, 1911, nec *Lydekker*.

Typical locality Lake Eyasi, German East Africa (lat. 3° S., long. 33 E.), to the south-east of the Victoria Nyanza, whence the range extends eastwards to Kilimanjaro, and probably southwards into Portuguese East Africa.

Type in Berlin Museum.

Spots (in both sexes) lighter coloured than in males of *rothschildi*, very irregular and jagged in outline, and often displaying a distinctly stellate form; shanks typically olive-

coloured and spotted down to hoofs, but in some old individuals whitish and more or less free from spots. Skull with the anterior horn apparently less developed than in preceding races, and in some instances tending to disappear.

99. 10. 12. 1. Skull and skin, immature female. Rombo Valley, Kilimanjaro. *Presented by E. N. Buxton, Esq.*, 1899.

99. 10. 12. 2. Skull, immature. Same locality.
Same history.

1. 7. 21. 1. Head and neck, young, mounted. Kilimanjaro. *Purchased (Ward)*, 1901.

3. 11. 18. 1. Portion of skin. Kilimanjaro.
Presented by J. Rowland Ward, Esq., 1903.

4. 11. 2. 2. Skin, immature female, mounted. British East Africa. *Presented by T. F. V. Buxton, Esq.*, 1904.

8. 7. 5. 1. Head and neck, mounted. B. E. Africa.
Presented by Capt. Houblon, 1908.

9. 11. 27. 1. Skull and head and skin. Sultan Hamad, Uganda Railway, B. E. Africa.
Presented by A. B. Percival, Esq., 1909.

I.—Giraffa camelopardalis thornicrofti.

Giraffa camelopardalis thornicrofti, *Lydekker*, *Nature*, vol. lxxxvii, p. 484, 1911, *Proc. Zool. Soc.* 1912, p. 771, pl. lxxxvi.

Typical locality Petauke district, N. E. Rhodesia.

Characterised by the low and conical anterior horn, the grey colour and scattered spotting of the sides of the face, the chestnut-brown forehead, deepening into black on the tips of the horns, the absence of a distinctly stellate pattern in the neck and body spots, which are light brown on a yellowish fawn ground, and the uniformly tawny colour of the shanks. It differs from *tippelskirchi* by the more compact frontal horn, the brown, in place of grey, forehead, and the uniformly fawn shanks, the latter being often whitish in old males of *tippelskirchi*, but fawn and spotted in females and young males.* This race and *tippelskirchi* agree (and

* *Vide* M. de Rothschild and H. Neuville (Ann. Sci. Nat., Zool. ser. 9, vol. xiii, pp. 124, 129), who state that in the East African giraffe which they describe as *rothschildi*, but which—despite the locality whence it is stated to come—has all the characteristics of *tippelskirchi*, these age and sex differences are observable.

thereby differ from *rothschildi*) in having the triangular space between the eye and the nostril devoid of spots, but in adult males of *tippelskirchi* the ground-colour of the whole head is dirty greyish white, whereas in *thornicrofti* the forehead is chestnut or umber brown, deepening into black at the tips of the horns, which are grey in the Kilimanjaro race.

0. 4. 3. 1. Portion of skin from hind part of body. East bank of Loangwa River, N. E. Rhodesia.

Presented by Dr. P. L. Sclater, 1900.

7. 2. 4. 5. Skull, female. Same locality.

Presented by C. B. C. Storey, Esq., 1907.

10. 10. 17. 1. Skin, mounted. Petauke district, N. E. Rhodesia. Type. *Presented by H. Thornicroft, Esq.*, 1910.

J.—Giraffa camelopardalis congoënsis.

Giraffa camelopardalis congoënsis, *Lydekker*, *Hutchinson's Animal Life*, vol. ii, p. 83, 1903, *Proc. Zool. Soc.* 1904, vol. i, p. 219, *Game Animals of Africa*, p. 362, 1908; *Trouessart*, *La Nature*, vol. xxx, p. 341, 1908; *Schouteden*, *Rév. Zool. Africaine*, vol. ii, p. 134, 1912.

Typical locality Dungu, north-east of the Welle River, Belgian Congo.*

Type in Congo Museum, Tervueren, Belgium.

Characterised by the large size and sub-quadrangular form of the body-spots, which show no tendency to split up into stars, the fully spotted shanks—especially the hind pair—of which the ground-colour is grey-fawn, and the well-developed anterior horn. The sides of the face are well spotted, and the terminal tuft of the tail is unusually large.

No specimen in the collection.

K.—Giraffa camelopardalis infumata.

Giraffa infumata, *Noack*, *Zool. Anz.* vol. xxxiii, p. 356, 1908.
Giraffa camelopardalis infumata, *Lydekker*, *Game Animals of Africa*, *Suppl.* p. 20, 1911.

Typical locality Zambesi Valley, Barotsiland.

Named on the evidence of a pair of living specimens—

* In the original description the locality is given Katanga; the error is corrected by Schouteden, *loc. cit.*

the male from the north and the female from the south side of the Zambesi.

Stated to resemble *capensis* (*infra*, p. 256) in the general character of the markings, except on the hind-legs, where, especially in the male, the spots assume an irregular rosette-like form; ground-colour of neck and body light smoky brown, darker on neck; under-parts white, with numerous small spots; shanks brownish ochre, finely spotted in their upper halves. Anterior horn well developed.

No specimen in collection.

L.—Giraffa camelopardalis angolensis.

Giraffa camelopardalis angolensis, *Lydekker*, *Hutchinson's Animal Life*, vol. ii, p. 121, 1893, *Proc. Zool. Soc.* 1904, vol. i, p. 221, pl. xiv, *Game Animals of Africa*, p. 365, 1908; *Trouessart*, *La Nature*, vol. xxx, p. 341, 1908; *Ward*, *Records of Big Game*, ed. 6, p. 116, 1910.

Typical locality Cuneni Valley, 150 miles south-west of Humbé, Angola.

Type in Tring Museum.

Allied to *capensis* (*infra*, p. 256), but with the brown markings of the sub-quadrangular type of those of *congoënsis*, and separated from one another by a network of lighter lines. Spots on face restricted to an area below a line connecting the lower border of eye with angle of mouth; an indistinct triangular white patch below ear; body-spots large, brown, with ill-defined margins; a sudden break into smaller spots at middle of thighs and on the corresponding part of fore-legs, recalling the similar but more strongly pronounced feature in *antiquorum*, which this race also resembles in the abundant spotting of the under-parts; ground-colour white or whitish; shanks tawny, profusely spotted to the hoofs. Anterior horn represented by a low tuberosity or swelling; whether occipital horns were developed is not apparent.

6. 10. 26. 1. Skull and skin, the latter in fourteen pieces. Angola. *Purchased* (*Ward*), 1906.

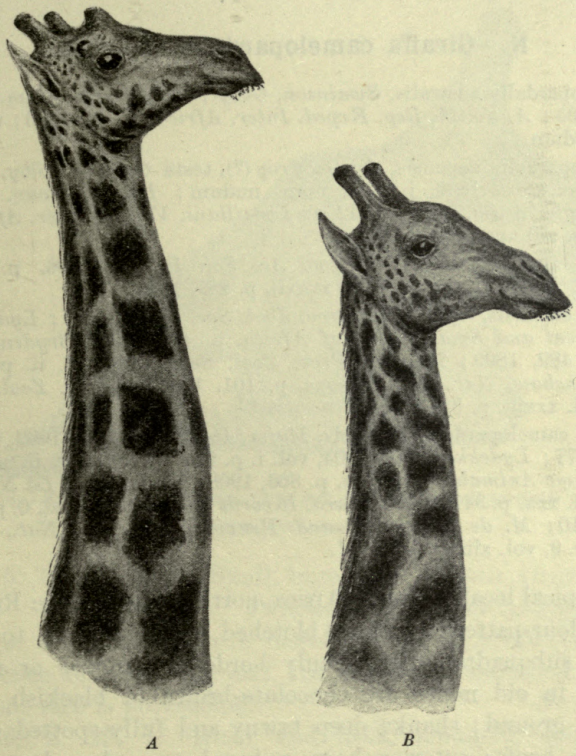
M.—Giraffa camelopardalis wardi.

Giraffa camelopardalis wardi, *Lydekker*, *Proc. Zool. Soc.* 1904, vol. i, p. 221, pl. xv, fig. 2, *Game Animals of Africa*, p. 366, 1908; *Beddard*, *Proc. Zool. Soc.* 1906, vol. ii, p. 626; *Lankester*, *ibid.* 1907, p. 122; *Ward*, *Records of Big Game*, ed. 6, p. 116, 1910.

Giraffa wardi, *Noack*, *Zool. Anz.* vol. xxxiii, p. 355, 1908.

Typical locality Northern Transvaal.

A large dark chocolate-coloured race, with the anterior



A *B*

Fig. 45.—Head and Neck of Toposa Giraffe (*Giraffa camelopardalis cottoni*), *A*, and of North Transvaal Giraffe (*Giraffa camelopardalis wardi*), *B*.

horn reduced to a low irregular protuberance, the occipital horns greatly developed, and the body-spots broken up into irregular stars, recalling those of *tippelskirchi*, from which

this race (apart from the absence of a frontal horn) differs by the dark chocolate-brown—instead of chestnut—body-spots, the stellate form of which serves to distinguish *wardi* from *capensis;* spots on sides of face restricted to region below and behind eyes; shanks spotted.

3. 11. 18. 1. Head and neck, mounted (fig. 45, *B*), body-skin (with limbs), and skull. Northern Transvaal. Type.

Body-skin presented by the Hon. Walter Rothschild, head by J. Rowland Ward, Esq., 1903.

N.—Giraffa camelopardalis capensis.

Camelopardalis australis, *Swainson, Geogr. and Classif. Anim.* p. 95, 1835; *A. Smith, Rep. Exped. Inter. Africa*, p. 40, 1836; nomen nudum.

Camelopardalis capensis, *E. Geoffroy* (?), teste *Gray; Ogilby, Proc. Zool. Soc.* 1836, p. 134, nom. nudum; *Lesson, Nouv. Tabl. Règne Anim.* p. 168, 1842, ex *Levaillant, Voyage Intér. Afrique*, pls. viii and ix, 1790.

Giraffa australis, *Rhoads, Proc. Ac. Sci. Philad.* 1896, p. 514; *Müller, Zool. Garten*, vol. xxxvii, p. 289, 1896.

Giraffa capensis, *de Winton, Proc. Zool. Soc.* 1897, p. 277; *Lydekker, Great and Small Game of Africa*, p. 488, 1899; *Bryden, ibid.* p. 489, 1899; *Thomas, Proc. Zool. Soc.* 1901, vol. ii, p. 475; *Renshaw, Nat. Hist. Essays*, p. 101, 1904; *Noack, Zool. Anz.* vol. xxxiii, p. 354, 1908.

Giraffa camelopardalis capensis, *Major, Proc. Zool. Soc.* 1902, vol. ii, p. 77; *Lydekker, ibid.* 1904, vol. i, p. 222, pl. xvi, vol. ii, p. 341, *Game Animals of Africa*, p. 366, 1908; *Trouessart, La Nature*, vol. xxx, p. 341, 1908; *Ward, Records of Big Game*, ed. 6, p. 116, 1910; *M. de Rothschild and Neuville, Ann. Sci. Nat., Zool.* ser. 9, vol. xiii, p. 10, 1911.

Typical locality South Africa, north of the Orange River.*

Colour-pattern of the "blotched type," that is to say, large, subquadrangular, evenly bordered blotches or spots, which in old males are chocolate-brown or blackish, on a tawny ground; shanks deep tawny and fully spotted down to the hoofs; anterior horn reduced to a low boss, and occipital horns wanting. In immature specimens from the

* The older writers (*cf.* Jardine, *Naturalist's Libr., Mamm.* vol. iii, p. 187) state that giraffes occur in the extreme south of Cape Colony; but Bryden, *Great and Small Game of Africa*, p. 501, considers it doubtful whether they were ever found south of the Orange River, although there is an old Hottentot tradition to the effect that a herd formerly existed in the Queenstown district of Cape Colony.

northern Kalahari the spots are less decidedly of the blotched type, and show a tendency towards the netted pattern.

671, *a*. Skull, with horns sawn off. Koraqua, Klipfontein, South Africa.

Presented by Dr. W. J. Burchell, about 1817.

671, *b*. Skull, female, bisected. Maadji Mountains, South Africa. *Same history.*

42. 12. 6. 16. Skull, skin (in several pieces), and feet, from a mounted specimen. South Africa.

Presented by the Earl of Derby, 1842.

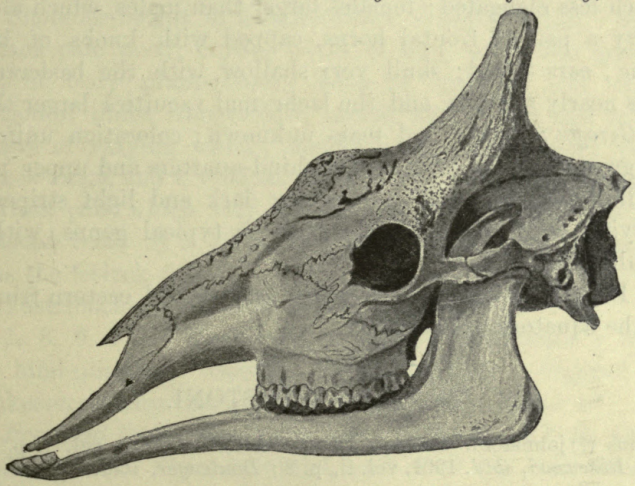


Fig. 46.—Skull of Southern Giraffe (*Giraffa camelopardalis capensis*). de Winton, *Proc. Zool. Soc.* 1897.

55. 12. 26. 142. Skull, immature. South Africa (?).

Purchased (*Zoological Society*), 1855.

89. 4. 11. 11. Skull, bisected. South Africa (?). The reference of both this and the preceding specimen to the present race is provisional. *No history.*

96. 2. 29. 1. Head and neck, mounted, sub-adult. Northern Kalahari. *Presented by H. A. Bryden, Esq.,* 1896.

98. 2. 28. 13. Skin, Bechuanaland. Presented by Bechuana Chiefs to H.M. Queen Victoria.

Presented by H.M. Queen Victoria, 1898.

II. Genus OKAPIA.

Okapia, *Lankester*, *Nature*, vol. lxiv, p. 247, July 4, 1901, *Proc. Zool. Soc.* 1901, vol. ii, p. 280, *Trans. Zool. Soc.* vol. xvi, p. 302, 1902, *Monograph of the Okapi*, Atlas, 1910; *Fraipont*, *Ann. Mus. Congo*, *Zool.* ser. 2, vol. i, p. 1, 1907; *M. de Rothschild and Neuville*, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. x, p. 1, 1910.

Ocapia, *Lankester*, *Science*, ser. 2, vol. xiv, p. 114, July 19, 1901; *Johnston*, *Cornish's Living Animals*, vol. i, p. 270, 1901; *Lydekker*, *Game Animals of Africa*, p. 375, 1908.

Size much smaller than in *Giraffa*, and neck and limbs much less elongated; females larger than males, which alone carry a pair of frontal horns, capped with knobs of bare bone; ears broad; skull very shallow, with the basicranial axis nearly straight, and the lachrymal vacuities larger than in *Giraffa*; glands and teats unknown; coloration uniform on greater part of body, but on hind-quarters and upper part of limbs marked with alternating dark and light stripes of varying width; tail shorter than in typical genus, with a smaller tuft.

Distributional area the north-eastern and eastern fringes of the equatorial forest-tract.

OKAPIA JOHNSTONI.

Equus (?) johnstoni, *Sclater*, *Proc. Zool. Soc.* 1901, vol. i, p. 50; *Ridewood*, *ibid.* 1901, vol. ii, p. 3; *Boulenger*, *ibid.* 1902, vol. ii, p. 72.

Okapia johnstoni, *Lankester*, *Nature*, vol. lxiv, p. 247, 1901, *Proc. Zool. Soc.* 1901, vol. ii, pp. 281 and 472, *Trans. Zool. Soc.* vol. xvi, p. 302, pls. xxx–xxxii, 1902, *Proc. Zool. Soc.* 1907, p. 129, *Monograph of the Okapi*, Atlas,* 1910; *Sclater*, *Proc. Zool. Soc.* 1901, vol. ii, p. 3, pl. i; *Carruccio*, *Boll. Soc. zool. ital.* ser. 2, vol. iv, p. 1, 1903, vol. vi, p. 177, 1905; *Lönnberg*, *Proc. Zool. Soc.* 1905, vol. ii, p. 309; *Alexander*, *From Niger to Nile*, vol. ii, p. 391, 1907; *Fraipont*, *Ann. Mus. Congo*, *Zool.* ser. 2, vol. i, p. 1, 30 pls. 1907; *Cabrera*, *Bol. Soc. espan. Hist. Nat.* vol. vii, p. 133, pl. ii, 1907; *M. de Rothschild and Neuville*, *C. R. Ac. Sci. Paris*, vol. cxlix, p. 693, 1909, *Ann. Sci. Nat.*, *Zool.* ser. 9, vol. x, p. 1, pls. i–vi, 1910; *Ridewood*, *Ann. Mag. Nat. Hist.* ser. 8, vol. vi, p. 387, 1910; *Camerano*, *Atti Ac. Sci. Torino*, vol. xlvi, p. 1, pl. i, 1911; *Cabrera*, *Cat. Mét. Mam. Madrid Mus.* p. 129, pl. iii, 1912; *Wilmet*, *C. R. Ac. Sci. Paris*, vol. clvi, p. 2006, 1913.

Ocapia johnstoni, *Lankester*, *Science*, ser. 2, vol. xiv, p. 114, 1901; *Johnston*, *Cornish's Living Animals*, vol. i, p. 270, 1901; *Lydekker*, *Great and Small Game of Africa*, Suppl. p. 6, 1902,

* No text published.

Game Animals of Africa, p. 375, 1908, *Ann. Mag. Nat. Hist.* ser. 8, vol. vi, p. 224, 1910.

Helladotherium tigrinum, *Johnston*, *Cornish's Living Animals*, vol. i, p. 270, 1901.

Okapia liebrechtsi, *Major*, *Proc. Zool. Soc.* 1902, vol. ii, pp. 73, fig. 7, and 342, fig. 63, *La Belgique Coloniale*, no. 9, 1902, p. 533; *Lankester*, *Proc. Zool. Soc.* 1907, vol. i, p. 129.

Okapia erikssoni, *Lankester*, *Ann. Mag. Nat. Hist.* ser. 7, vol. x, p. 417, 1902.

Typical locality Semliki Forest, East Central Africa.

The typical and only known species.

Shoulder-height in females about 5 feet 4 inches. Sides of face pale puce; crown, backs of ears, neck, and greater part of body plum-colour; sides of buttocks and upper portion of limbs transversely barred with black and white stripes of varying width; shanks mainly white, with black fetlock rings, and a vertical black stripe on anterior surfaces of front pair, which may extend over the knees, or may be replaced there by a white knee-cap, and in some examples joins the fetlock ring.

Distribution co-extensive with that of genus.

1. 8. 9. 53. Two strips of skin ("bandoliers") from the hind-quarters. Semliki Forest. Types. Figured by Lankester, *Monograph of the Okapi*, pl. i, figs. 3 and 4.*

Presented by Sir Harry Johnston, G.C.M.G., K.C.B., 1901.

1. 8. 9. 51. Skin, mounted, and skull (fig. 48), female. Semliki; collected by Karl Eriksson. Type of *O. erikssoni*. Skin figured by Lankester, *op. cit.* pl. i, fig. 1; skull pl. iii, fig. 1, pl. viii, fig. 2, and xiii, fig. A. *Same history.*

1. 8. 9. 52. Skull, immature. Semliki. Figured by Lankester, *op. cit.* pl. xv, fig. J. *Same history.*

6. 12. 27. 1. Skin and skeleton, immature, mounted. Ituri Forest; collected by Major P. H. G. Powell-Cotton. Skin figured by Lankester, *op. cit.* pl. i, fig. 2; skull pl. iii, fig. 2, pl. vii, fig. 2, and pl. xiii, fig. B. *Skin presented by Major P. H. G. Powell-Cotton, skeleton purchased*, 1906.

7. 7. 8. 264. Skin, mounted, and skull, immature. Wellé Valley, on border of Belgian Congo; collected by the Alexander-Gosling Expedition. Skull figured by

* References to earlier figures of this and the following specimens are given in the "Monograph."

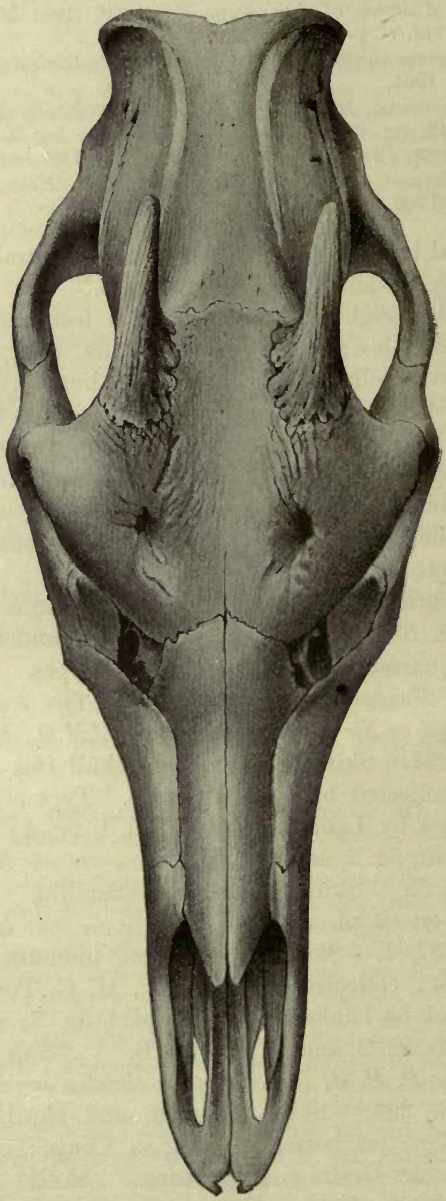


FIG. 47.—FRONTAL VIEW OF SKULL OF MALE OKAPI (*Okapia johnstoni*).

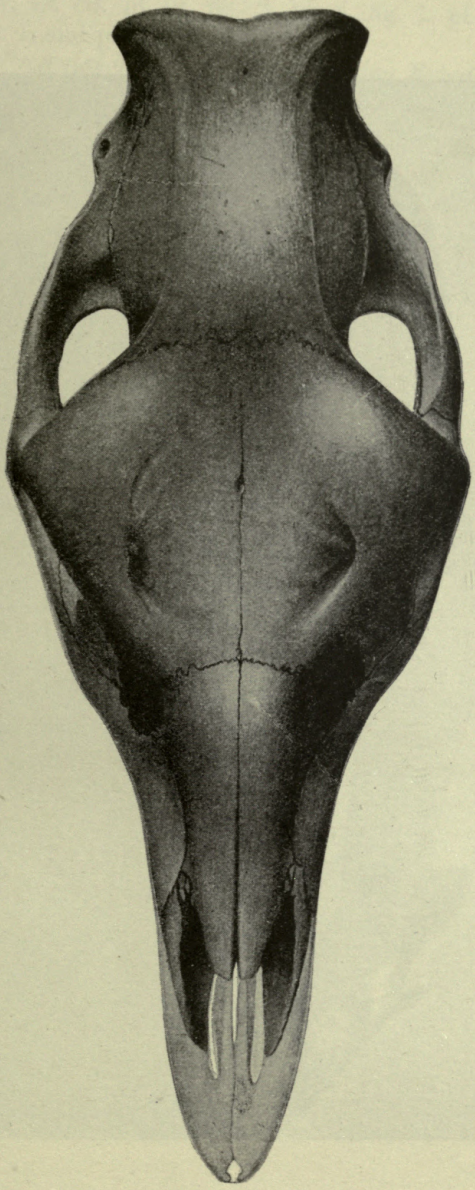


FIG. 48.—FRONTAL VIEW OF SKULL OF FEMALE OKAPI (*Okapia johnstoni*).

FIG. 49.—THE OKAPI (*Okapia johnstoni*).

Lankester, *op. cit.* pl. iv, fig. 2, pl. v, fig. 1, pl. vi, fig. 1, pl. xi, fig. 1, and pl. xiv, fig. D.

Presented by the Alexander-Gosling Expedition, 1907.

7. 12. 25. 1. Skull, immature (skin, mounted, in America). Ituri Forest. Figured by Lankester, *op. cit.* pl. iv, fig. 1, pl. viii, fig. 1, and pl. xiii, fig. C. *Purchased (Ward)*, 1907.

7. 12. 25. 2. Cast of skull. Locality of original (in an American Museum) unknown. Figured by Lankester, *op. cit.* pl. xv, fig. H. *Same history.*

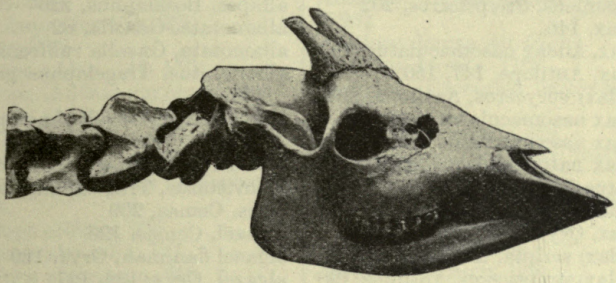


FIG. 50.—SIDE VIEW OF SKULL AND ANTERIOR CERVICAL VERTEBRÆ OF OKAPI (*Okapia johnstoni*).

7. 12. 26. 1. Cast of skull. The original, which, with the rest of the skeleton, is in the Congo Museum, Tervueren, Belgium, was obtained at Mundala, Belgian Congo, and is the type of *O. liebrechtsi*. Figured by Lankester, *op. cit.* pl. xvi, fig. L. *Presented by the Tervueren Museum*, 1907.

13. 7. 3. 1. Skin and skeleton, female, mounted. Ituri Forest. *Presented by the Rowland Ward Trustees*, 1913.

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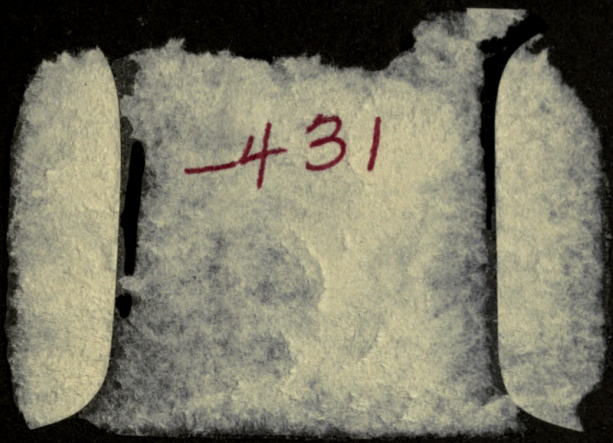
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